ATA 31
ECAM System

GLOSSARY OF ABBREVIATIONS

Abbreviations	Signification
A	Amber
AC	Alternating Current
A/C	Aircraft, Amber/Cyan
ADC	Air Data Computer
ADV	Advisory
AIDS	Aircraft Integrated Data System
AFS	Automatic Flight System
ARINC	Aeronautical Radio Inc.
ARP	Aeronautical Recommended Practices
ASAP	As Soon As Possible
ATS	Autothrottle System
C	Cyan
CGCC	Center of Gravity Control Computer
CLR	Clear
CRC	Continuous Repetitive Chime
CRT	Cathode Ray Tube
DC	Direct Current
DU	Display Unit
ECAM	Electronic Centralized Aircraft Monitoring
ECP	ECAM Control Panel
EFIS	Electronic Flight Instrument System
ELEC	Electrics
ENG	Engine
FAR	Federal Aviation Regulations

Abbreviations	Signification
FLT CTL	Flight Controls
FQI	Fuel Quantity Indication
FWC	Flight Warning Computer
FWS	Flight Warning System
G	Green
HYD	Hydraulics
L	Left
L/G	Landing Gear
LRU	Line Replaceable Unit
LT	Light
M	Magenta
NAV ADC	Navigation - Air Data Computer
P/B	Pushbutton
R	Right, Red
RC	Repetitive Chime
RCL	Recall
SAE	Society Of Automotive Engineers
SC	Single Chime
SDAC	System Data Analog Converter
SGU	Symbol Generator Unit
STS	Status
TBD	To Be Determined
T.O	Take Off
W	White

A300/A310 ECAM System - Component Functional Identification Numbers (FIN)

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF.
1WT	DISPLAY UNIT-ECAM, L	4VU	210		31-57-22
1WV	SDAC	94VU	122		31-55-22
1WW1	FWC-1	92VU	122		31-53-34
1WW2	FWC-2	93VU	122		31-53-34
2WW	WLDP	8VU	120		31-53-23
3WT	DISPLAY UNIT-ECAM, R	4VU	210		31-57-23
5WT	CTL PNL-ECAM	11VU	210		31-57-11
9WT1	SGU-ECAM, 1	92VU	122		31-57-34
9WT2	SGU-ECAM, 2	93VU	122		31-57-34
10WW	ANNUNCIATOR-ECAM/FWC2 FAULT	470VU	212		
11WW	ANNUNCIATOR-ECAM/FWC1 FAULT	470VU	212		
12WW	ANNUNCIATOR-ECAM/WLDP FAULT	470VU	212		
13WT	P/BSW-ECAM/DISPLAYS	470VU	212		
13WW	P/BSW-ECAM/INPUTS	470VU	212		
15WW	P/BSW-AUDIO CANCEL	417VU	210		
16WW	SWITCH-EMER AUDIO CANCEL	417VU	210		
17WW	LOUDSPEAKER-CAPT		211		31-53-25
18WW	LOUDSPEAKER-F/O		212		31-53-25

Electronic Centralized Aircraft Monitoring System provides the crew with operational assistance for both normal and abnormal aircraft system situations.

This operational assistance is given through two CRTs (Cathode Ray Tube) by means of message and system synoptics. The data processing is fully automatic and as such does not require any additional crew action or selection.

NORMAL AIRCRAFT SYSTEM SITUATION

The ECAM improves crew comfort by eliminating the need for frequent scanning of various systems panels for:

- monitoring temporarily used system or functions (MEMO page normally displayed on L CRT).
- routine system monitoring (most suitable SYNOPTIC system adapted to the actual flight phase displayed on R CRT).
- systems parameter trending (Constant monitoring of some systems parameters which are automatically displayed on R CRT when their value drifts out of normal range but well before reaching the warning level).

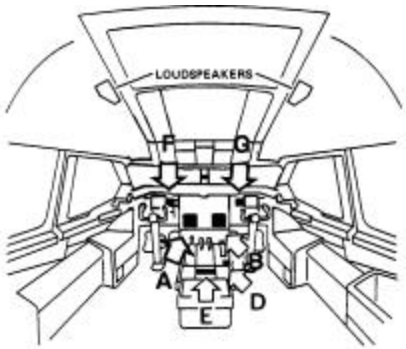
ABNORMAL AIRCRAFT SYSTEM SITUATION

The ECAM significantly decreases the crew workload by providing the crew with:

- improved failure analysis.
- orientation of corrective actions.
- minimization of need to refer to paper check list or manual read out.
- improved understanding of aircraft and system configuration after failure.

In addition, the ECAM generates audio and visual signals. The audio signals are transmitted by the cockpit loudspeakers and the visual signals supply the CRT's and the master lights.

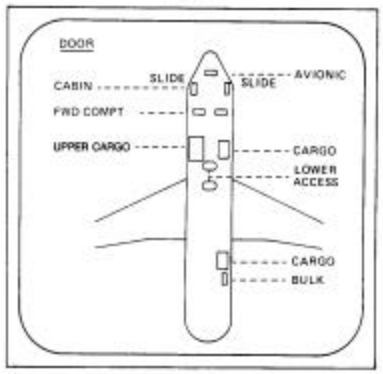
Flight Deck LH/RH ECAM Displays and Panels



A

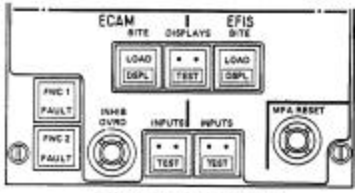
L ECAM DISPLAY UNIT

B



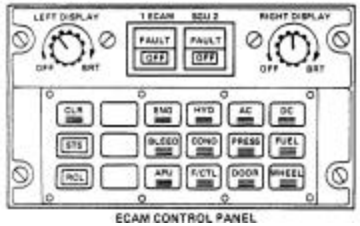
R ECAM DISPLAY UNIT

C



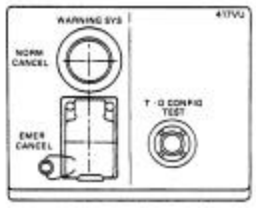
ECAM MAINTENANCE PANEL

E



ECAM CONTROL PANEL

D



F G

A300/Some A310s

A300/Some A310 - ECAM System Components

The ECAM system consists of:

- Two FCCs (Flight warning computer) which acquire the aircraft systems data to process warning, caution and status functions. The critical failure signals (mainly Red warning) supply .each FWC. The other signals (mainly Amber caution) are split between the two FMCs with a possible exchange of data through a cross-talk bus.

Each FWC has the complete capacity to acquire and process all the critical failure signals.

Each FWC has the complete capacity to process all the non critical failure signals.

Each FWC has the half capacity to acquire the non critical failure signals.

The FWC also generates:

- the audio warning signals
- the master lights control signals
- the stick shaker control signals
- the AFCS warning signals
- the data for AIDS system

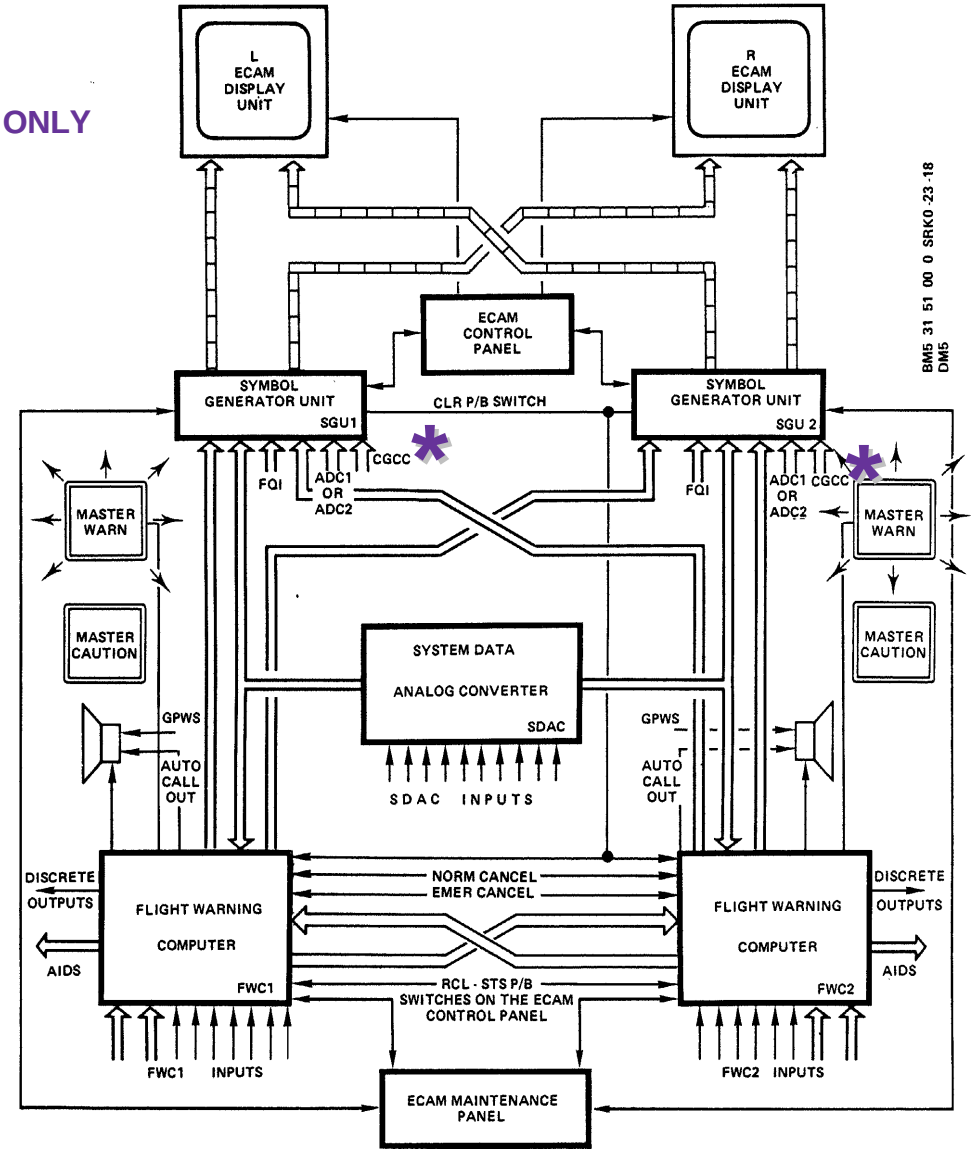
- An SDAC (System Data Analog/Digital Converter) which acquires various data and converts it into the digital format necessary for further processing.
- Two SGUs (Symbol Generator Unit) which process outputs from both FWCs, SDAC, ADC and FQI (Fuel Quantity Indication System) in order to present either system displays or various messages. Each SGU has the capability to drive both CRT's.
- Two CRT's which are presenting system displays and messages. These CRT's are interchangeable with the EFIS CRTs.
- The MASTER WARN and the MASTER CAUTION lights provide a visual warning (without identification of the system).
- An ECAM control panel which allows the crew to:
  - clear a warning presentation by pressing the CLEAR pushbutton
  - manually call the STATUS function
  - play back the failure sequence by pressing the RECALL pushbutton
  - manually select a system display

- An audio interface with
  - 2 loudspeakers
  - 1 normal cancel pushbutton
  - 1 safety wired EMER cancel switch

- A maintenance control panel which is used for all maintenance operation and trouble shooting on ground.

A300/Some A310 - ECAM System Schematic

*CGC SYSTEM - A300 ONLY



Some A310 - ECAM System Components

The ECAM system consists of:

- Two FCCs (Flight warning computer) which acquire the aircraft systems data to process warning, caution and status functions. The critical failure signals (mainly Red warning) supply .each FWC. The other signals (mainly Amber caution) are split between the two FMCs with a possible exchange of data through a cross-talk bus.

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- Two CRT's which are presenting system displays and messages. These CRT's are interchangeable with the EFIS CRTs.
- The Warning Light Display Panel (WLDP) provide a visual warning (with identification of the system).
- An ECAM control panel which allows the crew to:
  - clear a warning presentation by pressing the CLEAR pushbutton
  - manually call the STATUS function
  - play back the failure sequence by pressing the RECALL pushbutton
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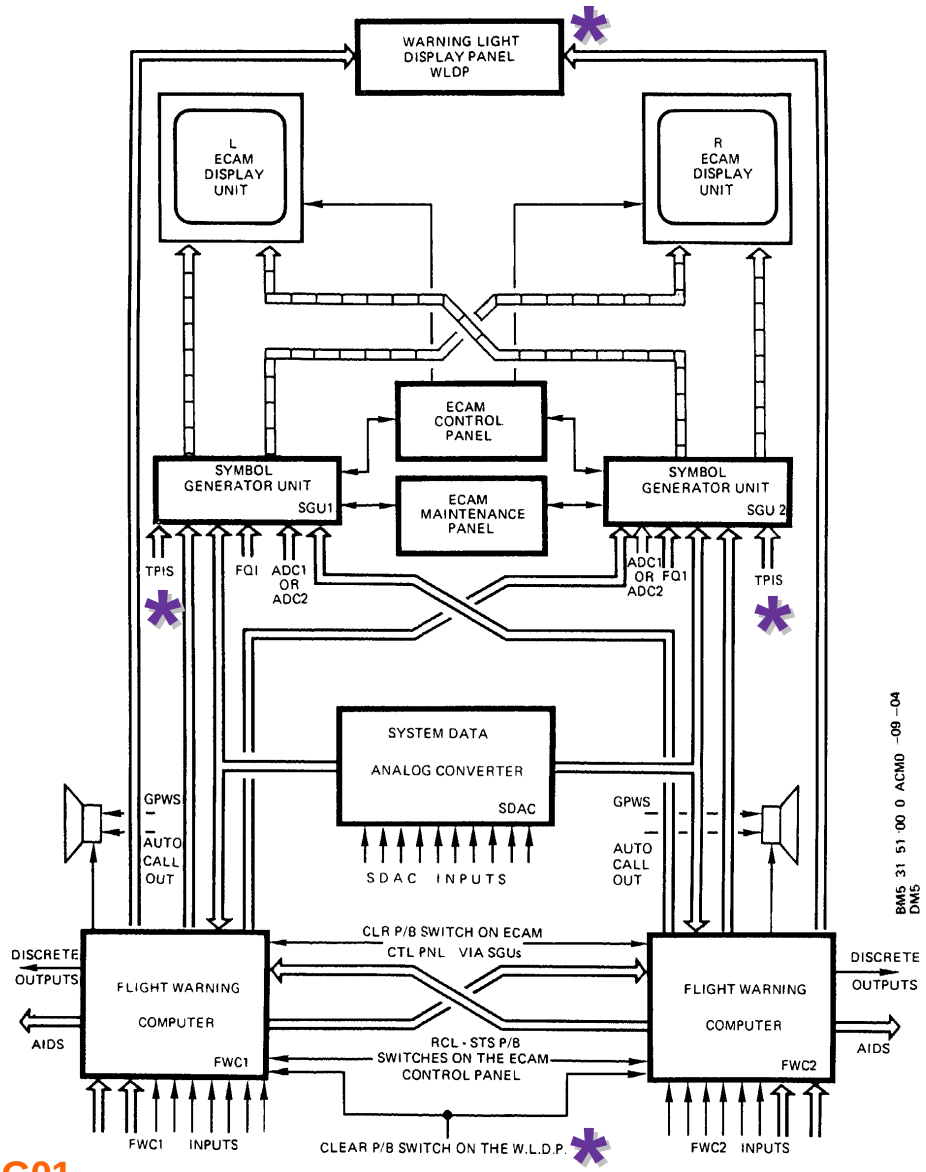
- An audio interface with
  - 2 loudspeakers
  - 1 normal cancel pushbutton
  - 1 safety wired EMER cancel switch

- A maintenance control panel which is used for all maintenance operation and trouble shooting on ground.

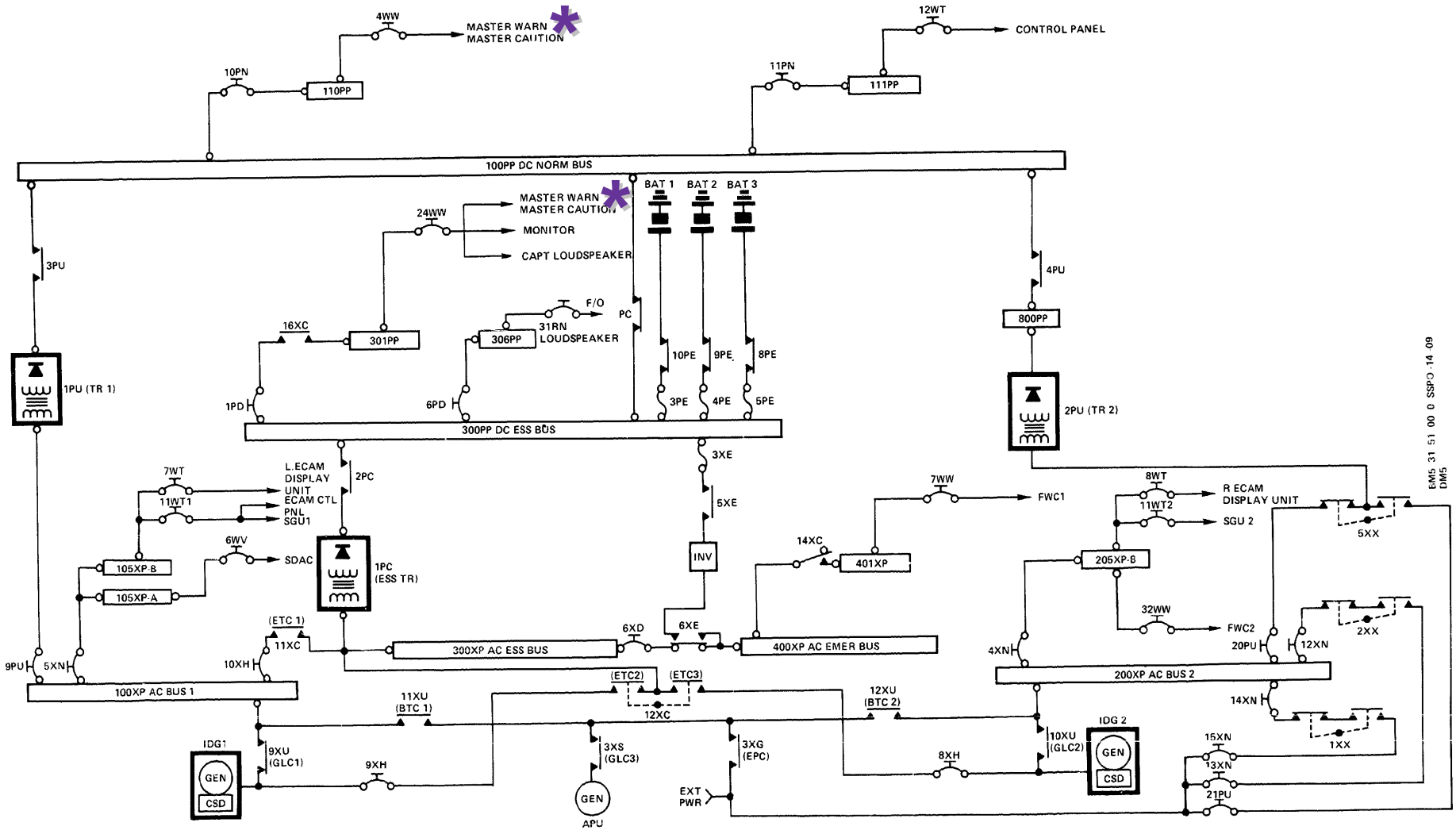
Some A310 - ECAM System Schematic

*TPIS - SOME A310

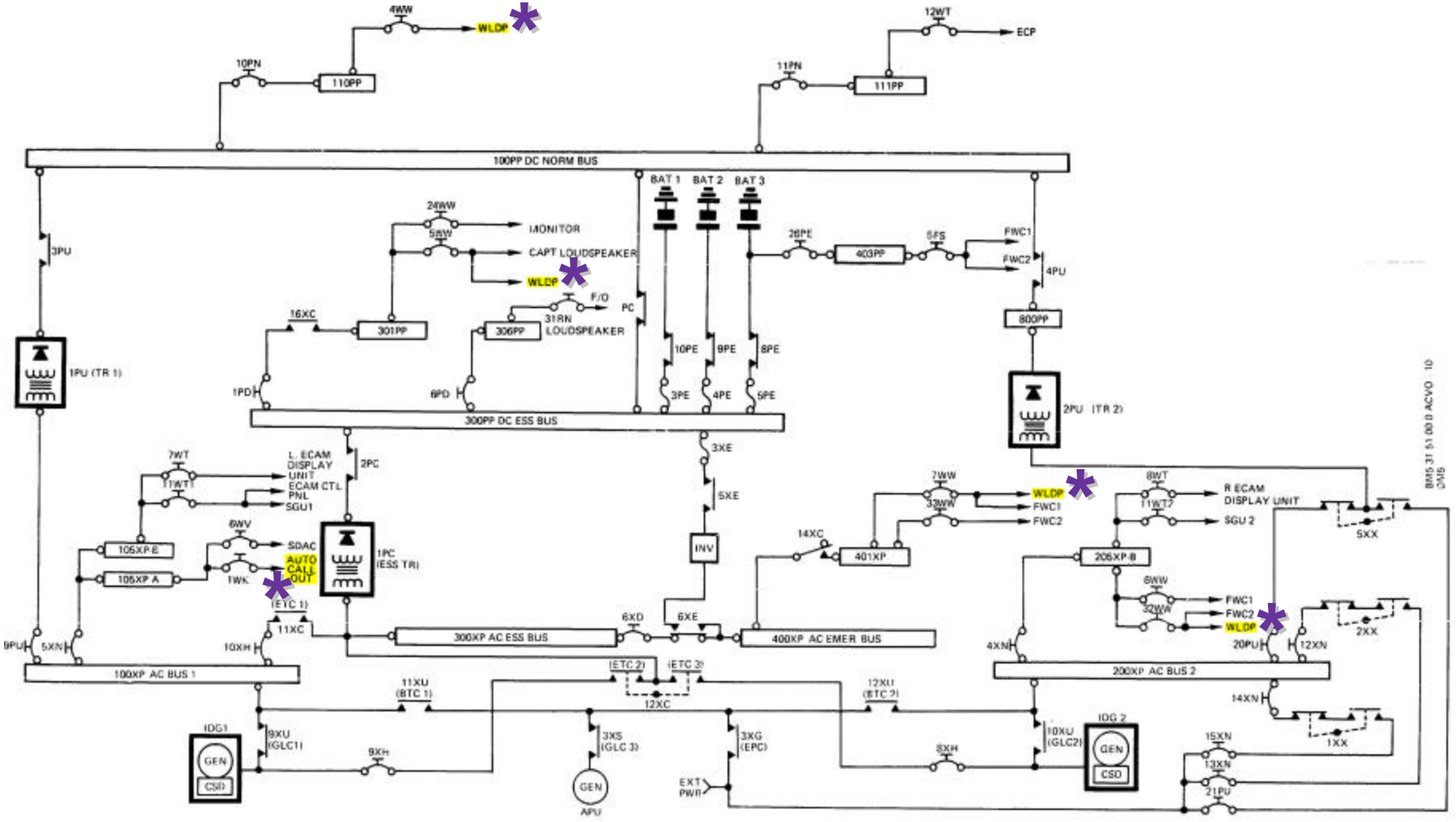
*WLDP - SOME A310



A300/Some A310 - ECAM System Power Supply - Electrical Schematic



Some A310 - ECAM System Power Supply - Electrical Schematic



LH ECAM - Display Information

NORMAL DISPLAY

In normal display (dual CRT mode), the left CRT presents one of the following pages:

Page 1
Presentation of an independent failure or primary failure. Procedures to be immediately applied.

Page 2
Presentation of a secondary failure if any.

Page 3: STATUS
- operational summary of the aircraft condition.
- explanation of possible autoland capability downgrading.
- indications of the aircraft status following failures which affect the flight.
- general contents and organization:
  - emergency procedures (LAND A.S.A.P.)
  - landing capability
  - limitations (speed, altitude...)
  - postponable procedures displayed or not on first page.
  - systems/functions lost
  - information

Page 4: MEMO
- Reminder of functions/systems which are temporarily used under normal operation.
- Total fuel
- TAT
- STATUS in the R upper corner if something is present in STATUS
- TO or LDG INHI in the L upper corner when an automatic inhibition applies

MESSAGE PRESENTATION

- Wording and abbreviations are consistent with the overhead panel.
- All secondary failures are listed following normal overhead panel scanning, that is,from left hand to right hand and from the lower part to the upper part for each column of the overhead panel.
- The action OFF or OFF/R always written in accordance with the overhead panel.

Warning Message
- Presentation of failure

1. Primary failures

A	HYD
A/B	BLUE PUMP LO PR ..... OFF
	BLUE SYS LO PR

The warning messages are written under their system title, in their related color. The primary failures are written in a box.

2. Secondary failures

A	FLT CTL
A	SLATS SYS 1 FAULT
A/B	SPLR 7 FAULT ..... OFF
A/B	SPLR 3 + 2 FAULT ..... OFF
A	YAW DAMPER 1 OFF

The system title of secondary failure is

preceded by an asterisk.

3. Independent failures

A	ELEC
A/B	GEN 1 FAULT ..... OFF

The corrective action has to be made on the illuminated P/B on the overhead panel.

LH ECAM - TYPES OF MESSAGES

1) Primary failures

HYD
BLUE PUMP LO PR.....OFF
BLUE SYS LO PR

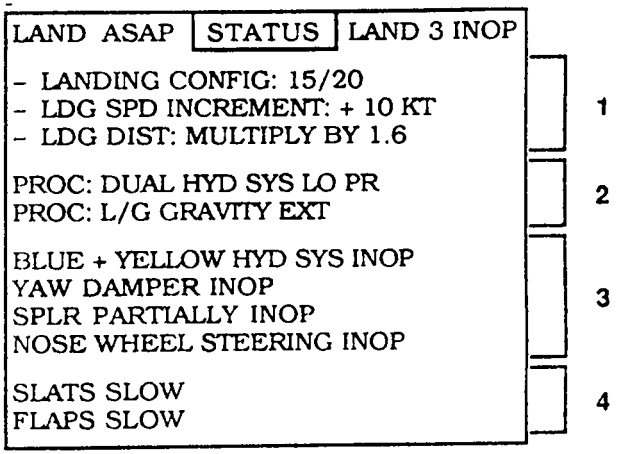
2) Secondary failures

FLT CTL
SLATS SYS 1 FAULT
SPLR 7 FAULT.....OFF
SPLR 1 + 4 FAULT.....OFF
YAW DAMPER 1 OFF

3) Independent failures

ELEC
GEN 1 FAULT.....OFF

LEFT CRT



1. All the limitations begin with a blue point (.).
2. Secondary failures.
3. Systems/functions lost.
4. Information.

The left CRT displays warning messages.

STATUS and MEMO information

NORMAL DISPLAY

In normal display (dual CRT mode), the CRT presents one of the system schematics.

- Color coding

Part of the synoptic	Color
IN USE	Green
NOT USABLE	Amber
NOT IN USE	not shown
"OFF" WRITTEN	White
NORMAL	Green
ABNORMAL	Amber

If data is not available, synoptic is not shown and is replaced by the inscription "NO DISCRETE AVAIL" written in Amber.

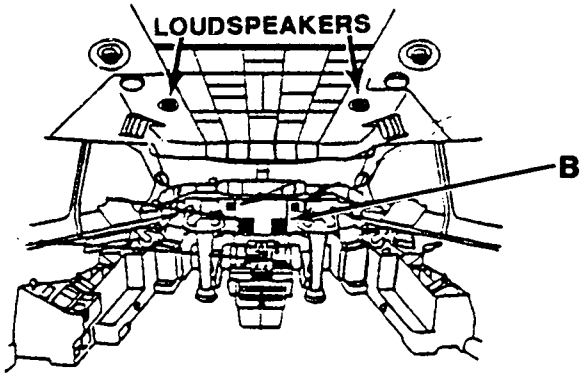
The numeric values or analog indications are Green when in the correct range.

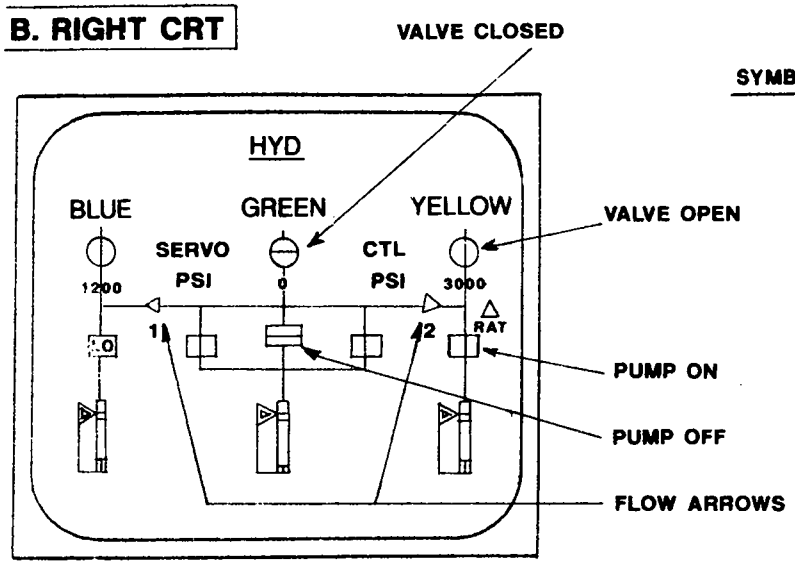
The warning ranges are shown in the color related to the warning level (Amber or Red). Unavailable values are replaced by a double X in Amber.

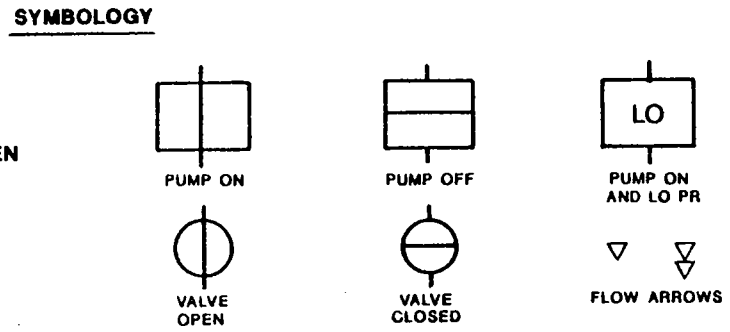
When a warning threshold is reached, the pointer and the numeric value becomes Amber (or Red).

All the units are shown in Cyan. The titles of the system are shown in White if the system page is called manually or by an advisory situation (in this last case, the title is followed by the mention "ADV" in White flashing until associated system P/B switch on CTL PNL has been depressed). In all the other cases, the titles of the system are Green.

RH ECAM - DISPLAY SYMBOLOGY







The right CRT display system synoptics.

NOTE: The ECAM CRTs are identical to EFIS CRTs.

PUMPS ON OR VALVES OPEN ARE SHOWN IN GREEN OR AMBER ACCORDING TO THE SYNOPTIC DIAGRAM COLORS. IF DATA IS NOT AVAILABLE THE SYNOPTIC DIAGRAM IS NOT SHOWN AND REPLACED BY THE MENTION NO DATA AVAILABLE WRITTEN IN AMBER.

A300/Some A310 Master Warning and Master Caution Lights

1. RED WARNING FLASHING LIGHTS (P/B SWITCHES)

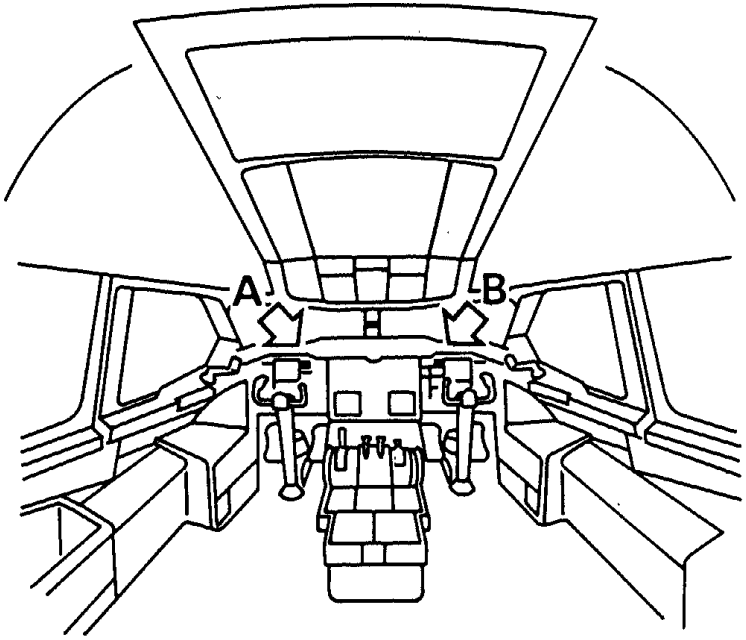
   Requires immediate crew action.

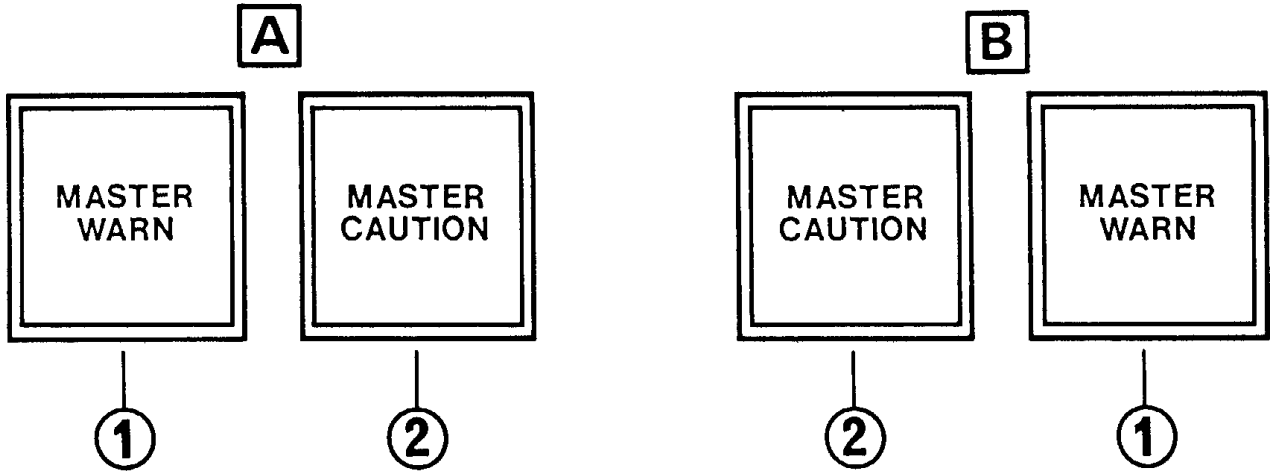
   In the event of a Red warning, depressing the Master Warning light will extinguish these lights and stop the aural warning for which the inhibition is authorized by the official rules. This action has no effect on CRT messages.

2. AMBER WARNING LIGHTS (P/B SWITCHES)

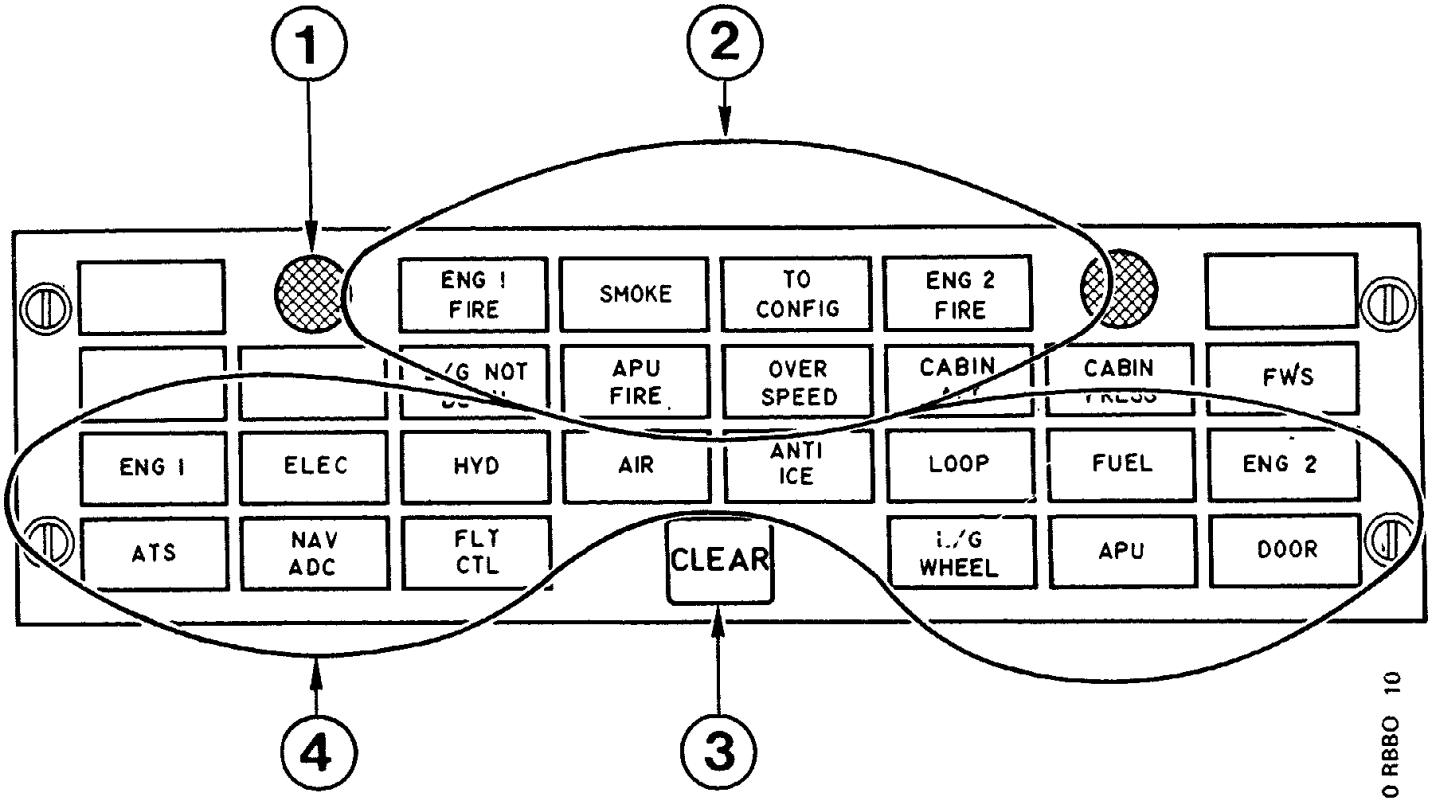
   Action to be performed depends on crew decision. In the event of an Amber warning, depressing the Master Caution light will extinguish these lights and stop the aural warning. This action has no effect on CRT messages.

A300/Some A310 Master Warning and Master Caution Lights





Some A310 Warning Light Display Panel (WLDP) - General Features



BM5 31 51 00 0 RBBO 10
DM5

-1- TWO PHOTOCELLS AUTOMATICALLY CONTROL THE BRIGHTNESS OF THE WARNING LIGHTS, PROVIDED THE ANN LT SWITCH ON THE OVERHEAD PANEL IS IN DIM POSITION.

-2- RED WARNING LIGHTS - REQUIRE IMMEDIATE CREW ACTION.

3- CLEAR P/B SWITCH - CLEAR LEGEND COMES ON WHITE. P/B SWITCH HAS TO BE USED IN THE EVENT OF FAILURE OF BOTH ECAM DISPLAY UNITS. IN THIS CASE THE WLDP IS USED AS A CONVENTIONAL MASTER WARNING PANEL. PRESSING THE CLEAR P/B SWITCH WHEN ITS LEGEND IS ON ENABLES THE WLDP TO BE CLEARED.

-4- AMBER WARNING LIGHTS. THE WARNING LIGHT FLASHES IN CASE OF PRIMARY FAILURE AND COMES ON STEADY FOR A SECONDARY OR INDEPENDENT FAILURE. ACTION TO BE PERFORMED DEPENDS ON CREW DECISION.

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A300/A310 ECAM System - Three Phases and Color Light Coding

ECAM Functions

Basic Principles

The two following principles have been adopted

- Flight compartment "lights out" philosophy In normal operation all the lights are off. The use of lights to indicate correct operation is limited to a minimum (green illumination for normal position according to FAR 25.1322).
- Detection sequence
  The detection sequence is composed of three distinct phases:

PHASE	FUNCTION	MEANS OF DETECTION
1	Warning	Aural warning
2	Identification	MASTER lights
3	Isolation	Detailed display (+local lights on control panel)

ECAM Data Definition

- Lights
  The following color coding is established on the basis of FAR 25-1322 recommendations.

INDICATION	COLOR	INTERPRETATION
WARNING	RED	Configuration or failure requiring immediate action
	AMBER	Configuration not requiring immediate action. Time for taking action will be left to the crew's discretion
INDICATION	GREEN	Normal operation
	BLUE	Normal transient configuration
	WHITE	Control position indication Neutralized abnormal configuration

CRT Displays

- Due to shadow mask CRT displays color coding is implemented with the following general rules:

COLOR	WARNING	SYSTEM
RED	EMERGENCY	EMERGENCY
AMBER	ABNORMAL	ABNORMAL
AMBER	DATA NOT AVAILABLE "NO ACTION FEEDBACK"	DATA NOT AVAILABLE FLAG "XX"
CYAN	ACTION TO BE TAKEN LIMITATIONS AND PROCEDURES	UNITS
WHITE	ACTION PERFORMED	TITLE "ADV" INSCRIPTIONS
GREEN	INFORMATION	NORMAL FUNCTIONING PARAMETERS IN NORMAL RANGE
MAGENTA	LDG INHIB STATUS T.O INHIB	

ECAM System - Warning Levels and Definition

The warnings are classified in 4 levels according to the importance and urgency of the corrective action required.

Level 3
This corresponds to an emergency situation. Corrective action must be taken immediately by the crew. The following warnings fall into this category:
- aircraft in hazardous configuration flight conditions.
- system failure altering the flight conditions.
- serious system failure.

These warnings illuminate the MASTER WARNING lights and are triggered with a continuous repetitive chime (CRC) or with specific aural warnings.

Level 2
This corresponds to an abnormal situation of the aircraft. Immediate corrective action is not required. This level mainly comprises system failures having no direct impact on safety. These warnings are identified by MASTER CAUTION light and are triggered with a single chime (SC).

Level 1
This corresponds to an alert situation requiring crew monitoring, such as failures leading to a loss of redundancy or degradation of a system. These warnings are sometimes identified by Amber lights on the local panel without a chime.

Level 0
This corresponds to an information situation and requires no special action.

NOTE: Level 3 has priority over level 2 which in turn has priority over level 1.

There are three distinct types of warnings:

1. Independent failure warning
   This is a failure, which affects an isolated item of equipment or system without affecting other items of equipment or system on the aircraft; e.g., fuel pump failure.

2. Primary failure warning
   - This is a failure of an item of equipment or system causing the loss of other items of equipment. This configuration constitutes a cascade of failures all originating from the same primary failure; e.g., ADC 1 failure leads to the loss of: pitch trim 1 yaw damper 1 AP 1
   - anemometrics information on Captain's instrument

3. Secondary failure warning
   This is the loss of an item of equipment or system resulting from a primary failure; e.g., loss of a fuel pump, resulting from a power supply busbar failure.

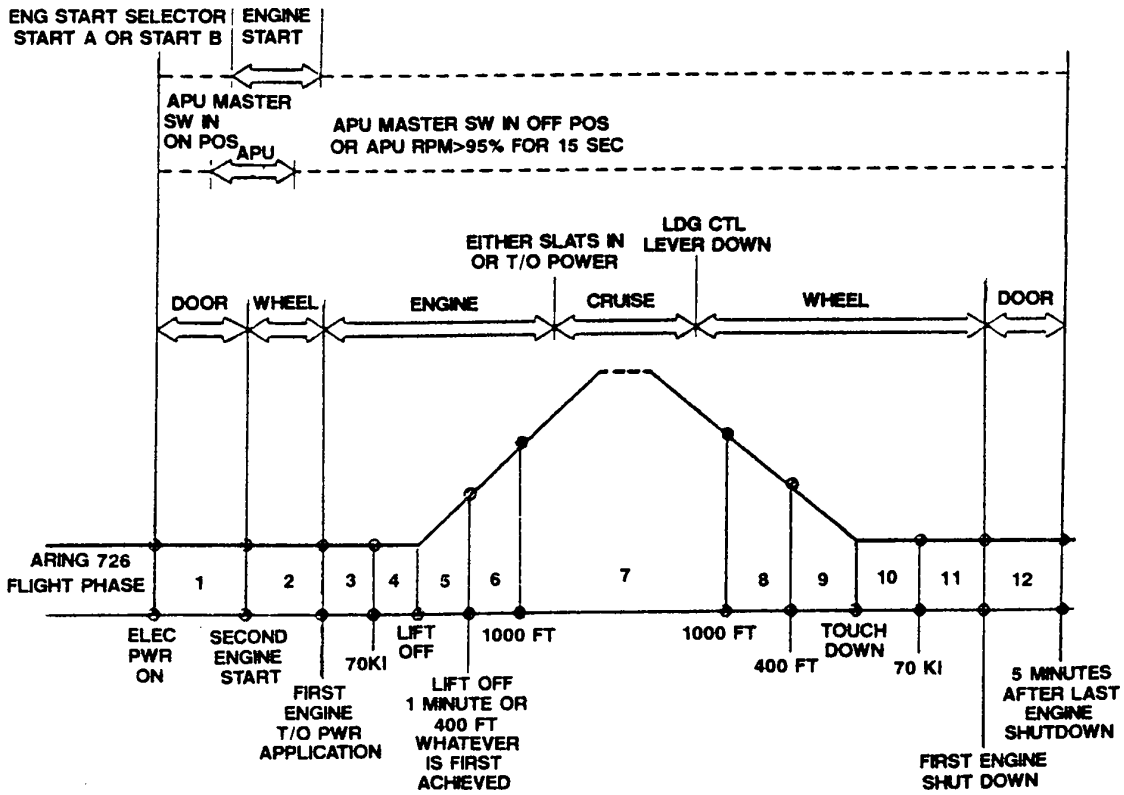
NOTE: Different failure combinations may occur sequentially or simultaneously.

ECAM System - Phases Of Flight

SYSTEM PAGES

The complete list of system pages is:

1 - ENGINE (Engine start page automatically presented during engine start sequence.)
2 - HYD
3 - ELEC AC
4 - ELEC DC
5 - AIR BLEED
6 - AIR COND
7 - CAB PRESS
8 - FUEL
9 - APU
10 - FLT CTL
11 - DOOR
12 - WHEEL
13 - CRUISE (Not selectable)



ECAM System - Highest Warning Level/number 3

	WARNING	MASTER WARN	AURAL WARNING	CRT DISPLAYS PRESENTATION	PILOT ACTION
LEVEL 3	1 - STALL WARNING - OVERSPEED - T.O CONFIG	NO YES YES	Cricket CRC CRC	No (Stick shaker) Warning message only Warning message only	IMMEDIATE ACTION
	2 - ENGINE FIRE	YES	CRC	Message + synoptic diagram	
	3 - APU FIRE	YES	CRC	Message + synoptic diagram	
	4 - ENG OIL LO PRESS	YES	CRC	Message + synoptic diagram	
	5 - EXCESSIVE CABIN ALT.	YES	CRC	Message + synoptic diagram	
	6 – SMOKE	YES	CRC	Message + synoptic diagram	
	7 - DUAL HYD FAILURE	YES	CRC	Message + synoptic diagram	
	8 - DUAL SERVO FAILURE	YES	CRC	Message + synoptic diagram	
	9 - AUTOPILOT FAILURE	YES	Cavalry charge	Warning message only	
	10 - AUTOLAND	NO	Click - 3 pulses	No (local warning light)	
	11 - LANDING GEAR	YES	CRC	Warning message only	
	12 - EXCESS AFT CG	YES	CRC	Message + Synoptic diagram	

NOTE: The three first warnings (1) never occur simultaneously. Level 3 warnings are always associated with an independent failure (except dual servo-controls and dual hydraulic failures).

ECAM System - Warning Levels 0 (Zero)/1/2 Priorities

	WARNING	MASTER CAUTION	AURAL WARNING	PILOT ACTION
LEVEL 2	FWS	YES	SC	IMMEDIATE ATTENTION
	ENGINE	YES	SC	IMMEDIATE ATTENTION
	HYDRAULICS	YES	SC	IMMEDIATE ATTENTION
	ELECTRICS	YES	SC	IMMEDIATE ATTENTION
	SERVO CONTROLS	YES	SC	IMMEDIATE ATTENTION
	APU	YES	SC	IMMEDIATE ATTENTION
	NAV ADC	YES	SC	IMMEDIATE ATTENTION
	FLIGHT CONTROLS	YES	SC	IMMEDIATE ATTENTION
	ATS	YES	SC	IMMEDIATE ATTENTION
	BRAKES	YES	SC	IMMEDIATE ATTENTION
	LANDING GEAR - WHEEL	YES	SC	IMMEDIATE ATTENTION
	FUEL	YES	SC	IMMEDIATE ATTENTION
	AIR BLEED	YES	SC	IMMEDIATE ATTENTION
	ANTI ICE	YES	SC	IMMEDIATE ATTENTION
	AIR CONDITIONING/CABIN PRESS	YES	SC	IMMEDIATE ATTENTION
	DOORS	YES	SC	IMMEDIATE ATTENTION
	LOOPS	YES	SC	IMMEDIATE ATTENTION
LEVEL 1	Same priority order as level 2 warnings	NOTHING	NOTHING	ATTENTION
LEVEL 0	Same priority order as level 1 and 2 warnings	NOTHING	NOTHING	INFORMATION

NOTE: Level 2 warnings can be associated with independent, primary or secondary failures.
Level 1 warnings can be associated with independent or secondary failures.
Level 0 warnings are always of independent type.

ECAM System - Emergency Cancel Function

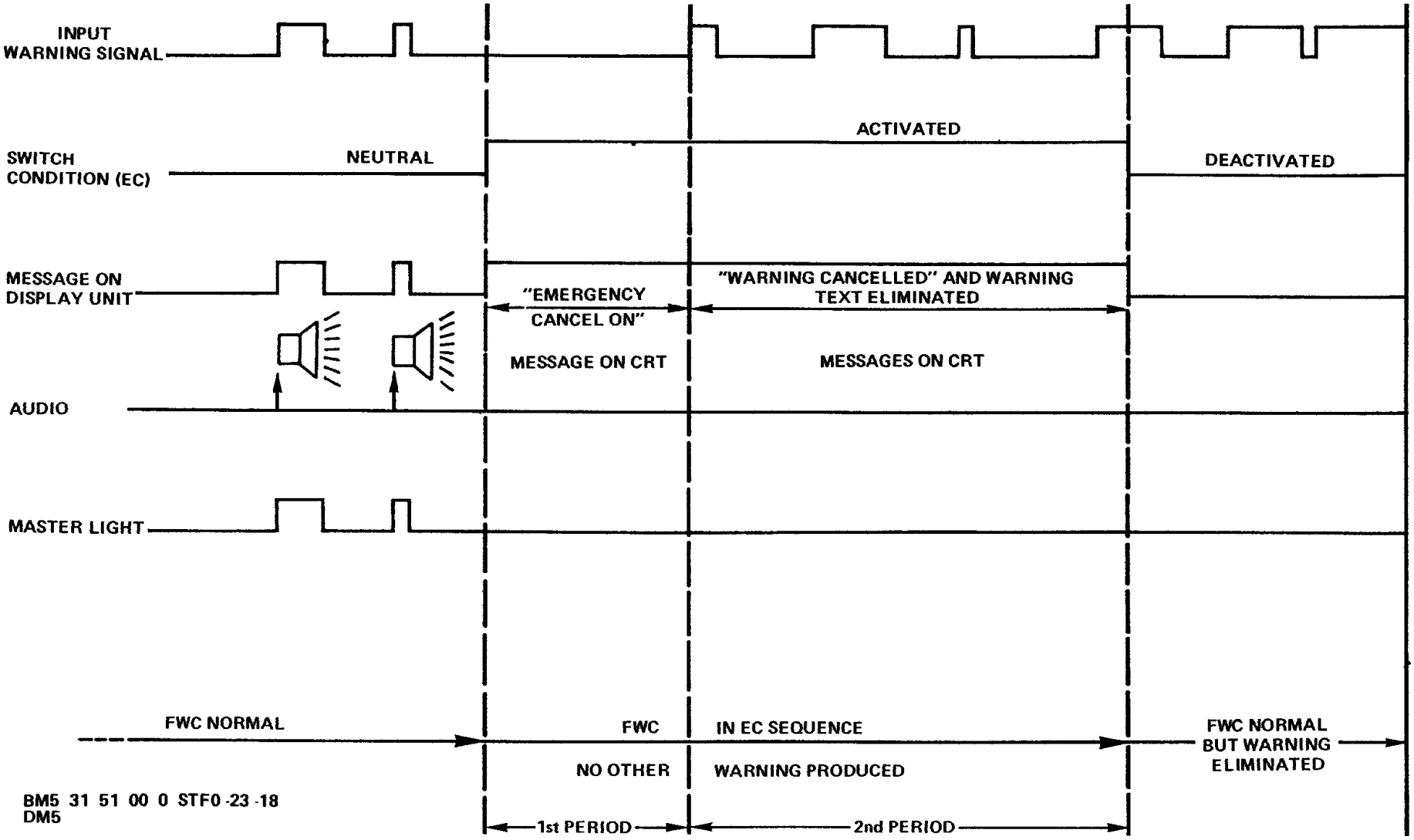
Emergency Cancel Function

This function is activated by a guarded sealed EMER CANCEL switch at the rear of the center pedestal, and enables cancellation of amber warning (CRT display, sound and MASTER lights; of course local lights on control panels are not affected).

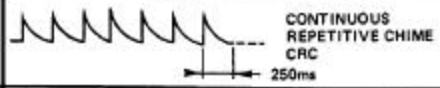
It acts in such a way as to ensure that once a warning is cancelled it remains cancelled even if the warning condition disappears and re-appears. CRT messages are given to indicate that the switch is activated "EMER CANCEL ON" and that the specific warning is cancelled ("CANCELLED WARNING" followed by the entire text of the cancelled warning). Selection of the specific warning is achieved by ensuring that the EMER CANCEL switch button is activated when the nuisance fault condition is present.

This function allows suppression of random and repetitive warnings (due to sensor failures ...) which could cause a considerable operational nuisance. This cancel facility can be manually reset by pressing the RCL P/B switch on ECAM control panel for more than 3 seconds. Automatic reset occurs at the beginning of Flight Phase 1 or 12. Action on the EMER CANCEL switch allows cancellation of the warning displayed on the top of CRT. Another action is necessary to cancel another warning. For red warning the EMER CANCEL switch acts as audio emergency cancel, that is, only aural warnings can be cancelled and if, for instance the red warning condition disappears and re-appears the associated aural warning is produced again.

ECAM System - Emergency Cancel Function Chart



Some A310 Aural Warnings - ECAM System Operational Sounds

WARNINGS	FWC AURAL WARNINGS	CANCELLATION
SYSTEM FAILURE AMBER WARNINGS	SINGLE CHIME SC	AUTO
FIRE	 CONTINUOUS REPETITIVE CHIME CRC	AUDIO CANCEL OR EMER AUDIO CANCEL FIRE HANDLE PULLED
SYSTEM FAILURE RED WARNINGS	CONTINUOUS REPETITVE CHIME CRC	AUDIO CANCEL
LANDING GEAR	APPROACH : CONTINUOUS REPETITIVE CHIME CRC	AUDIO CANCEL
	LANDING : CONTINUOUS REPETITIVE CHIME CRC	NIL*
CONFIGURATION	CONTINUOUS REPETITIVE CHIME CRC	NIL*
OVERSPEED	CONTINUOUS REPETITIVE CHIME CRC	NIL*
LANDING CAPABILITY CHANGE	CLICK 3 PULSES	AUTO
AUTO PILOT DISCONNECTION	CAVALRY CHARGE	INSTINCTIVE DISCONNECT 1 SEC. MIN
ALTITUDE ALERT	C CHORD	NIL*
DECISION HEIGHT	KETTLE	AUTO + AUDIO CANCEL
CALLS	SELCAL : BUZZER CABIN : BUZZER	AUDIO CANCEL AUTO
STALL	CRICKET	NIL*

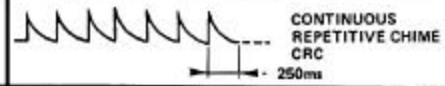
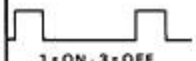
BM5 31 51 00 0 KS80 17

GPWS	WHOOP WHOOP PULL UP**	NIL*
STAB IN MOTION	WHOOLER**	NIL*

* CAN ONLY BE CANCELLED BY CORRECTIVE ACTION OR BY USE OF THE EMER AUDIO CANCEL SWITCH

** GENERATED BY DEDICATED UNITS

Some A310 Aural Warnings - ECAM System Operational Sounds

WARNINGS	FWC AURAL WARNINGS	CANCELLATION
SYSTEM FAILURE AMBER WARNINGS	SINGLE CHIME SC	AUTO
FIRE	 CONTINUOUS REPETITIVE CHIME CRC 250ms	AUDIO CANCEL OR EMER AUDIO CANCEL FIRE HANDLE PULLED
SYSTEM FAILURE RED WARNINGS	CONTINUOUS REPETITVE CHIME CRC	AUDIO CANCEL
LANDING GEAR	APPROACH : CONTINUOUS REPETITIVE CHIME CRC	AUDIO CANCEL
	LANDING : CONTINUOUS REPETITIVE CHIME CRC	NIL*
CONFIGURATION	CONTINUOUS REPETITIVE CHIME CRC	NIL*
OVERSPEED	CONTINUOUS REPETITIVE CHIME CRC	NIL*
LANDING CAPABILITY CHANGE	CLICK 3 PULSES	AUTO
AUTO PILOT DISCONNECTION	 CAVALRY CHARGE 1 s ON - 3 s OFF	INSTINCTIVE DISCONNECT 1 SEC. MIN
ALTITUDE ALERT	C CHORD	AUTO
DECISION HEIGHT	AUTO CALL OUT** "MINIMUM"	AUTO
CALLS	SELCAL : BUZZER 1 s ON 1 s OFF CABIN : BUZZER	AUDIO CANCEL AUTO
STALL	CRICKET	NIL*

BMS 31 51 00 0 LHD0-17

GPWS	WHOOP WHOOP PULL UP**	NIL*
STAB IN MOTION	WHOOLER**	NIL*

* CAN ONLY BE CANCELLED BY CORRECTIVE ACTION OR BY USE OF THE EMER AUDIO CANCEL SWITCH

** GENERATED BY DEDICATED UNITS

Some A310 Aural Warnings - ECAM System Operational Sounds

WARNINGS	FWC AURAL WARNINGS	CANCELLATION
SYSTEM FAILURE AMBER WARNINGS	SINGLE CHIME SC	AUTO
FIRE	CONTINUOUS REPETITIVE CHIME CRC 250ms	AUDIO CANCEL OR EMER AUDIO CANCEL FIRE HANDLE PULLED
SYSTEM FAILURE RED WARNINGS	CONTINUOUS REPETITIVE CHIME CRC	AUDIO CANCEL
LANDING GEAR	APPROACH : CONTINUOUS REPETITIVE CHIME CRC	AUDIO CANCEL
	LANDING : CONTINUOUS REPETITIVE CHIME CRC	NIL*
CONFIGURATION	CONTINUOUS REPETITIVE CHIME CRC	NIL*
OVERSPEED	CONTINUOUS REPETITIVE CHIME CRC	NIL*
LANDING CAPABILITY CHANGE	CLICK 3 PULSES	AUTO
AUTO PILOT DISCONNECTION	CAVALRY CHARGE 1 s ON - 3 s OFF	INSTINCTIVE DISCONNECT 1 SEC. MIN
DECISION HEIGHT	AUTO CALL OUT ** "MINIMUM"	AUTO
CALLS	SELCAL : BUZZER 1 s ON 1 s OFF CABIN : BUZZER	AUDIO CANCEL AUTO
STALL	CRICKET	NIL*

BM5 31 51 00 0 ADD0 -17 -12
DM5

GPWS	WHOOP WHOOP PULL UP **	NIL*
STAB IN MOTION	WHOOLER **	NIL*

NOTE:
No Altitude Alert/
C Chord/Auto--
Not applicable

* CAN ONLY BE CANCELLED BY CORRECTIVE ACTION OR BY USE OF THE EMER AUDIO CANCEL SWITCH

** GENERATED BY DEDICATED UNITS

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ECAM System - Control Panel

1. BRIGHTNESS knobs

   Used to switch on each CRT and adjust the brightness of the images.

2. SGU (Symbol Generator Unit) push-buttons

   They are extinguished in normal operation. The FAULT light illuminates Amber if a failure is detected by the SGU internal self test. Pressing the push-button 1 or 2 switches off the corresponding SGU, FAULT extinguishes and OFF illuminates White. Both CRT's are driven by the available SGU.

3. SYS (System) push-button

   Allow the manual selection of a system display. Pressing a system P/B illuminates it White. Disengagement is obtained by pressing the illuminate system P/B or another one or automatically if a warning or an advisory occurs. In SINGLE DISPLAY mode, manual selection is not possible as long as a warning or a status message is not cleared.

4. CLR (Clear) push-button

   Illuminates-White as long as a warning message or a status message is present on the CRT. In order to clear the messages, press the illuminated CLR P/B as many times as necessary to extinguish the illumination.

5. STS (Status) push-button

   Allows manual calling of a status message when there is no warning.

   Pressing the STS P/B illuminates the CLR P/B. Status message is automatically suppressed by a warning or by manually pressing the CLR P/B. The STS P/B does not illuminate.

   STATUS NORMAL is displayed on the CRT as long as STS P/B is depressed when no status information is present.

   Status messages are not displayed during flight phases 1 and 2

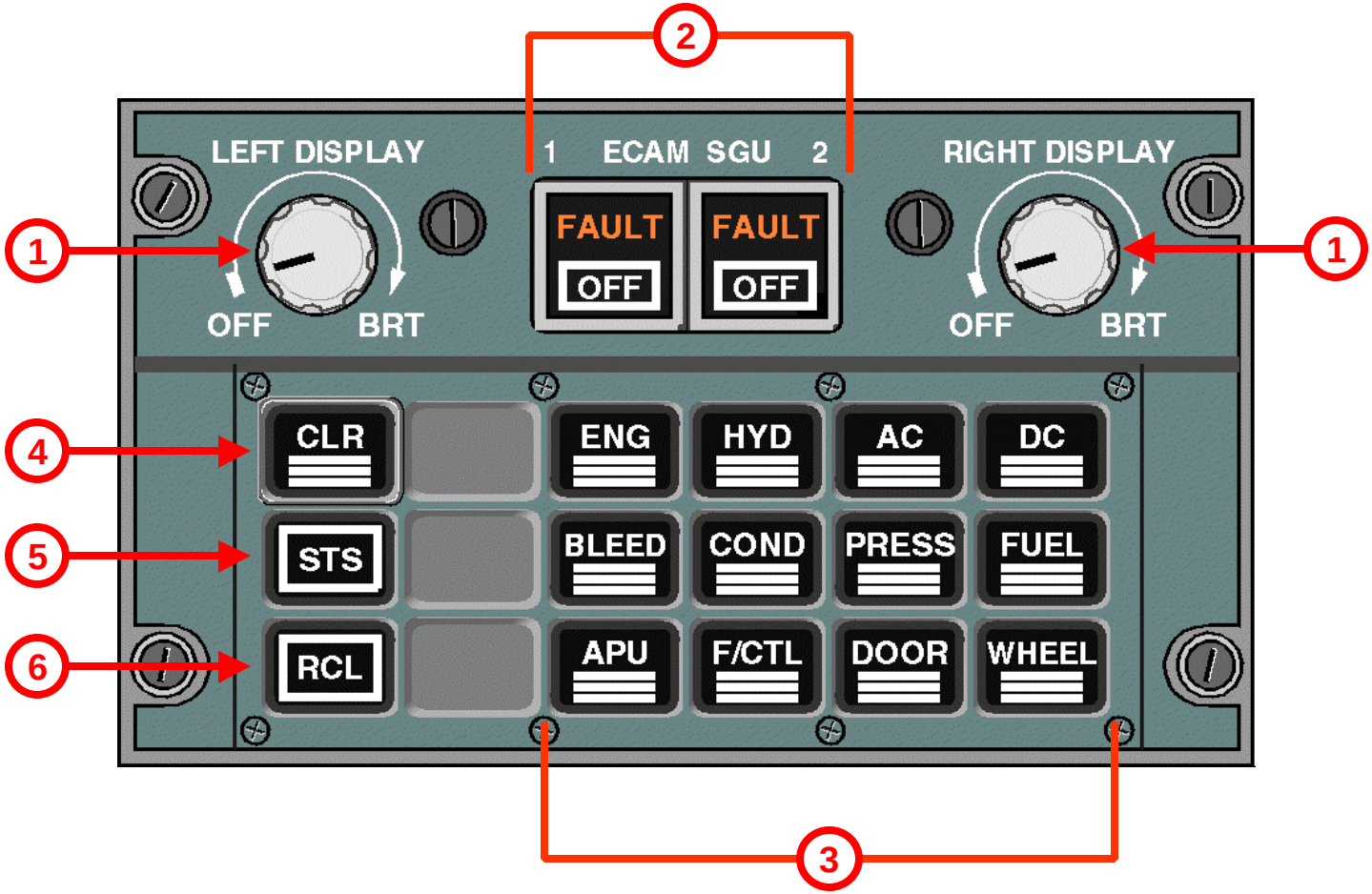
6. RCL (Recall) push-button

   Displays warning messages previously cleared without the associated aural warning, provided the failures are still present. It also allows cancellation of any flight phase related inhibition so as to display visual and aural warnings.

NOTE: This cancellation is only valid up to the end of present phases.

   Pressing the RCL P/B illuminates the CLR P/B. If the failure has disappeared, the, inscription NORMAL is displayed on the CRT as long as RCL P/B is depressed.

ECAM System - Control Panel



ECAM System - Audio Cancel Panel 417VU

1. EMER Cancel

   This switch, with its safety wired guard, inhibits all warnings. It is used in case of random and repetitive warnings which produce an operational nuisance.

   For Red warnings:

   It acts in such a way as to ensure that once a warning is canceled, it remains canceled even if the warning condition disappears and reappears. CRT messages are given to indicate that the function is activated (EMER CANCEL ON) and that the specific warning is canceled (e.g. APU FIRE WARNING CANCELED).

   This cancel facility can be reset by pressing the RCL pushbutton on ECAM CONTROL PANEL for more than 3 seconds.

   For Amber warnings:

   It only inhibits aural warnings. Inhibition is automatically canceled when aural warning failure disappears.

2. NORM CANCEL

   P/B allows inhibition of aural warnings which are allowed to be canceled.

3. T.O. CONFIG. TEST

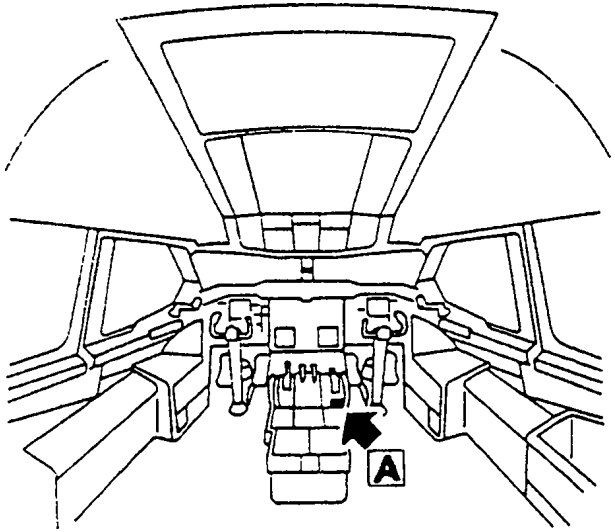
   When T.O. CONFIG. TEST pushbutton is pressed, a T.O. power application is simulated via a 5 second self-holding time.

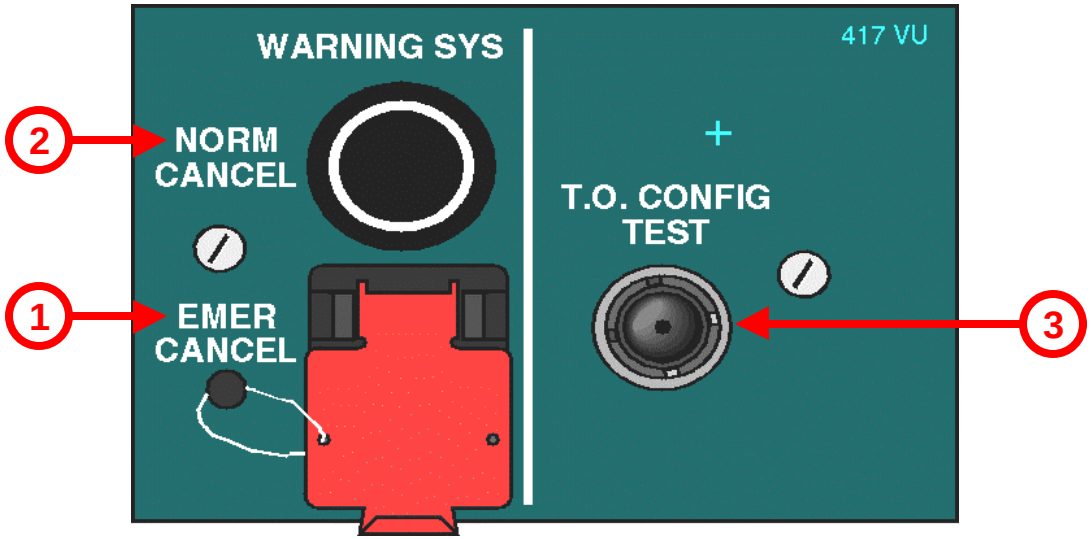
   This test will activate the appropriate warnings if the aircraft is not at takeoff configuration (see FLIGHT CONTROLS chapter for warning conditions).

   The warnings are canceled if the pushbutton is released and the self-holding time is over.

   If configuration is correct and provided that the pushbutton has been pressed for at least 2 sec. the message NORM FOR TAKE-OFF is displayed.

A300/A310 Audio Cancel Panel 417VU





ECAM System - Component Location and Circuit Breakers

ECAM SGU 9WT1 (9WT2)

The following circuit breakers are for the ECAM SGU:

PANEL	SERVICE	IDENT	LOCATION
21VU	ECAM SGU1	11WT1	108/B4
21VU	ECAM SGU2	11WT2	108/BT

FLIGHT WARNING COMPUTER (1WW1, 1WW2)

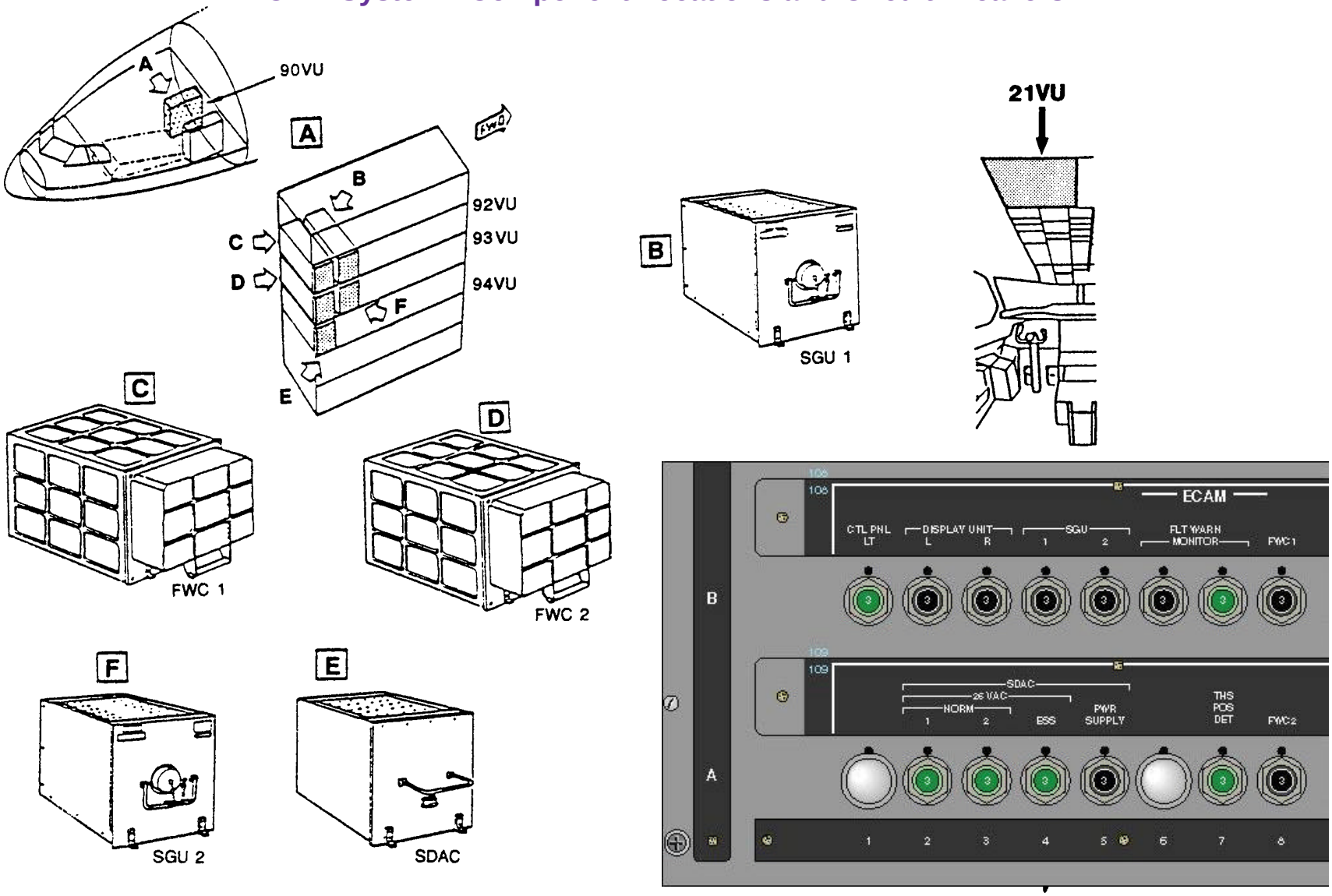
The following circuit breakers are for the FWCs

PANEL	SERVICE	IDENT	LOCATION
21VU	ECAM/FWC1	7WW	108/B 8
21VU	ECAM/FWC2	32WW	109/A 8

SYSTEM DATA ANALOG CONVERTER (1WV)

PANEL	SERVICE	IDENT	LOCATION
21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A 2
21VU	SCAM/SDAC/26VAC/NORM2	3WV2	109/A 3
21 VU	ECAM/SDAC/26VAC/ESS	5WV	109/A 4
21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5

ECAM System - Component Locations and Circuit Breakers



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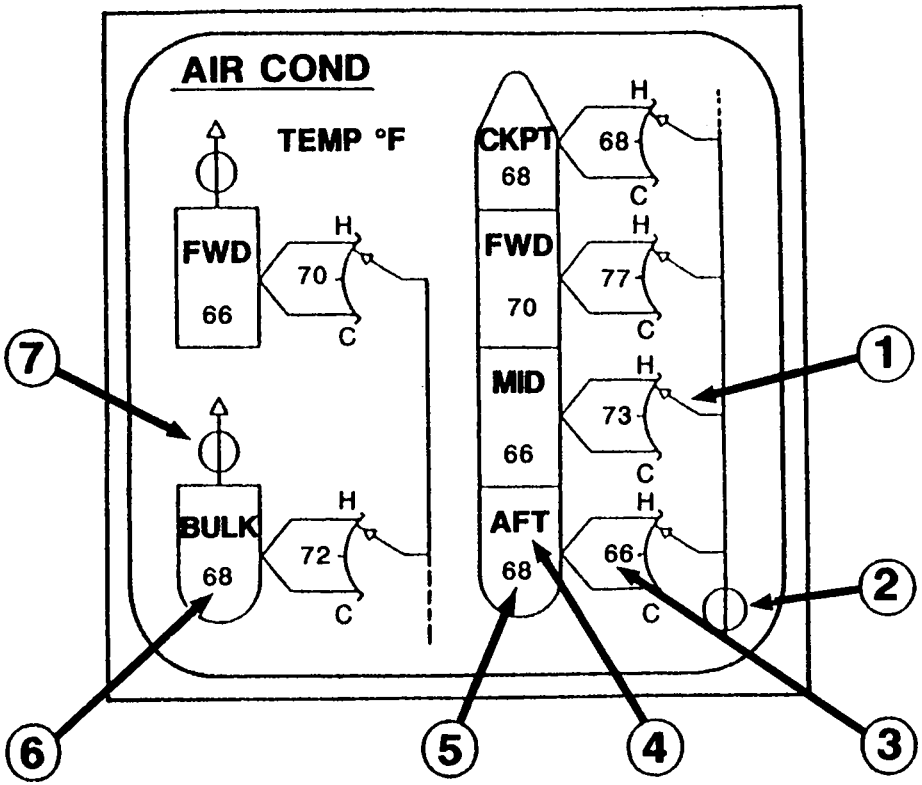
RH ECAM
Air Conditioning
Pages

RH ECAM - AIR COND Page



1. TRIM AIR VALVE POSITION INDICATION (G)
   H HOT-VALVE 100% OPEN
   C COLD-VALVE FULLY CLOSED
   (A) WHEN HOT AIR SUPPLY VALVE CLOSED

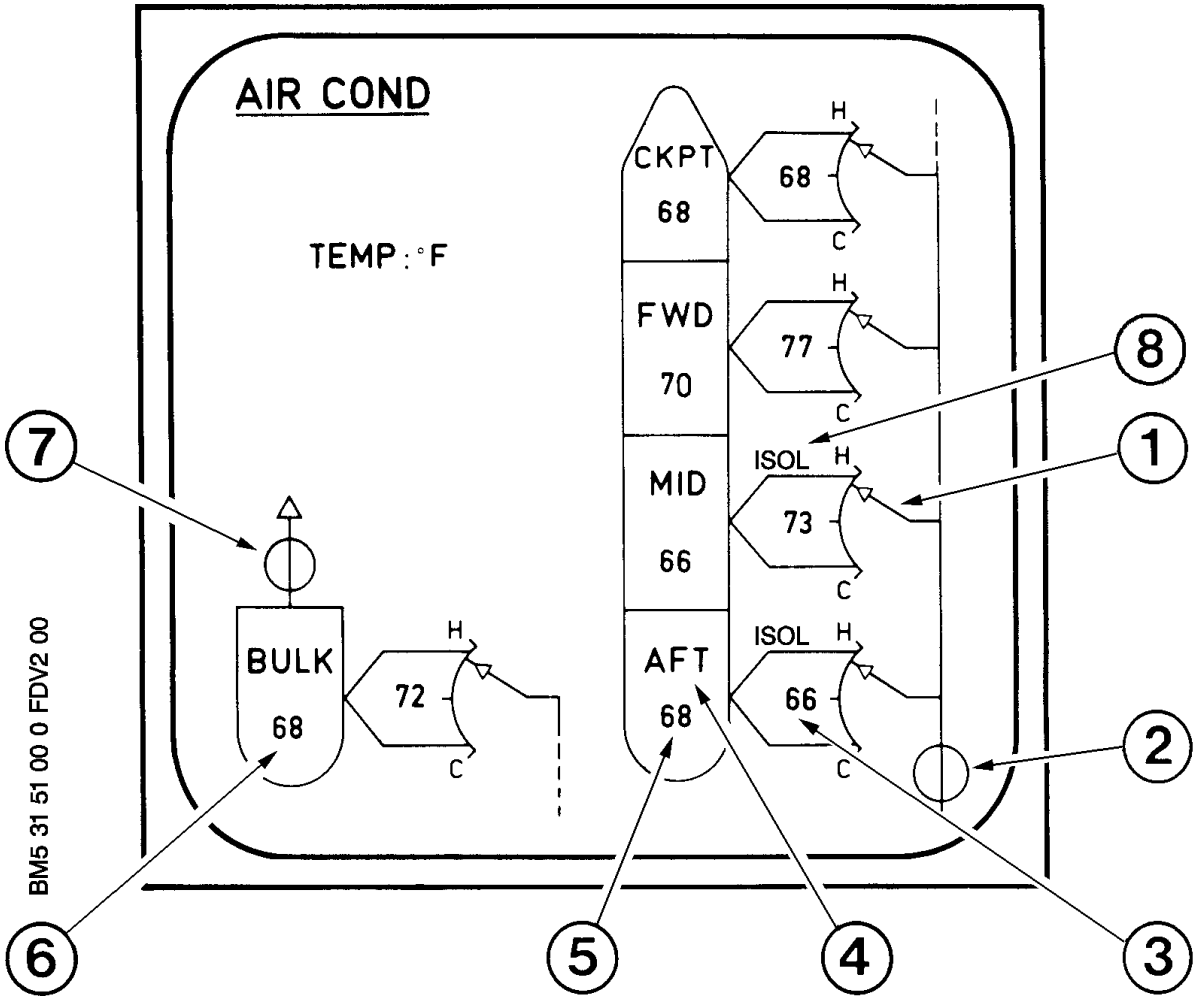
2. HOT AIR SUPPLY VALVE
   (G) VALVE OPEN

4. COMPARTMENT IDENTIFIER (W)
   (A) WHEN DUCT TEMP > 190°F

5. COMPARTMENT TEMPERATURE (G)
   CARGO COMPARTMENT TEMPERATURE (G)

6. CARGO ISOLATION VALVE

A300/Some A310s AIR COND Page - No FWD Cargo Heat



1. TRIM AIR VALVE POSITION INDICATION (G)

   H HOT VALVE 100% OPEN
   C .COLD. VALVE FULLY CLOSED
   (A) WHEN HOT AIR SUPPLY VALVE CLOSED

2. HOT AIR SUPPLY VALVE

   (G) : VALVE OPEN

   (A) : VALVE CLOSED

3. DUCT TEMPERATURE (G)
   (A) WHEN DUCT t° ⩾ 190° F

4. COMPARTMENT IDENTIFIER (W)
   (A) WHEN DUCT t° ⩾ 190° F

5. COMPARTMENT TEMPERATURE (G)

6. CARGO COMPARTMENT TEMPERATURE (G)
   FLASHES WHEN t° > 92° F

7. CARGO ISOLATION VALVE

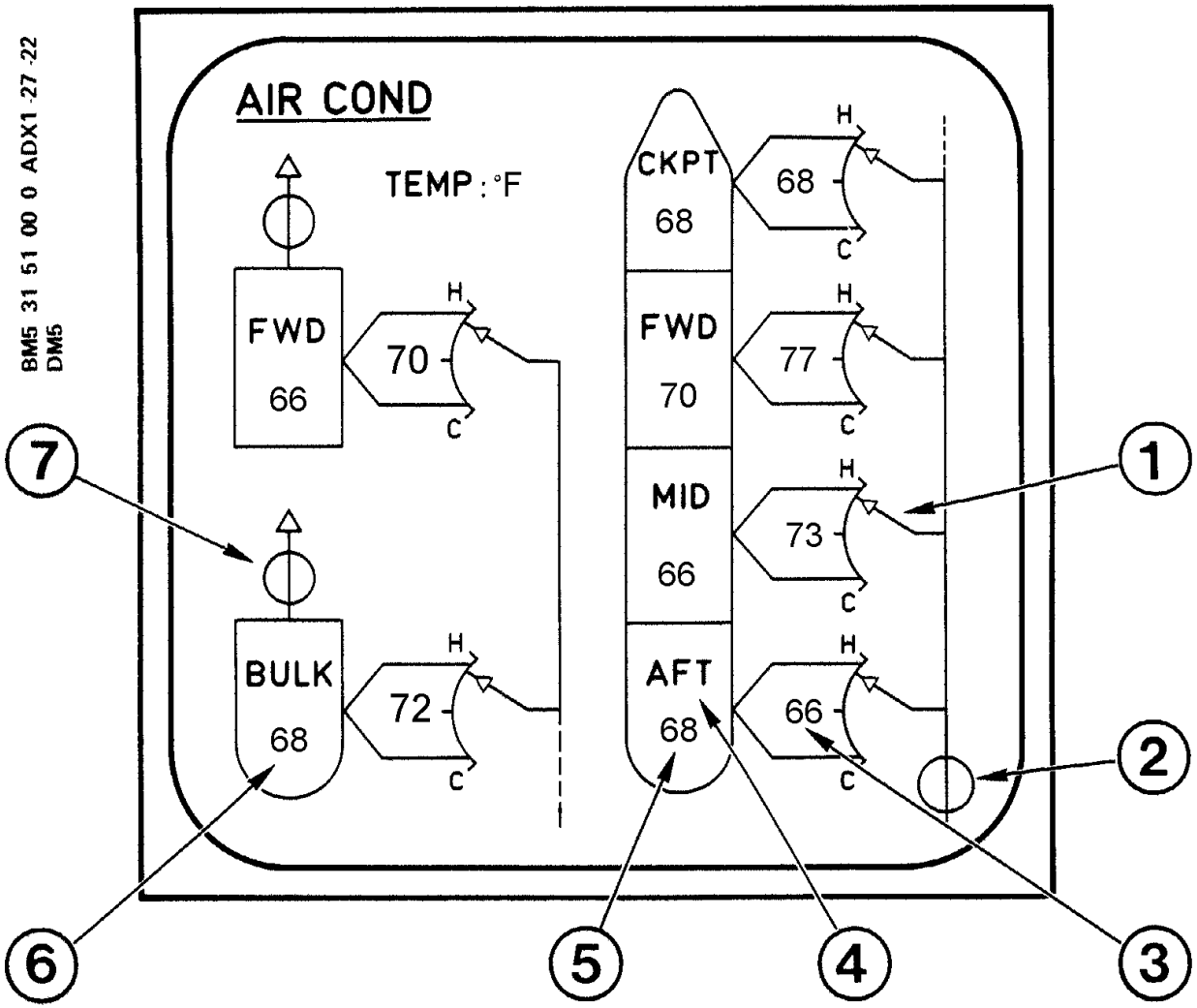
   (G) : VALVE OPEN

   (A) : VALVE CLOSED

8. ISOL
   (G) WHEN VALVE CLOSED AND SMOKE DETECTION

   (A) WHEN VALVE NOT CLOSED AND SMOKE DETECTION, OR VALVE COMMAND OFF

Some A310s AIR COND Page - FWD and AFT Cargo Heat



1 - TRIM AIR VALVE POSITION INDICATION (G)

H HOT VALVE 100 % OPEN
C - COLD - VALVE FULLY CLOSED
(A) WHEN HOT AIR SUPPLY VALVE CLOSED

2 - HOT AIR SUPPLY VALVE

(G) : VALVE OPEN

(A) : VALVE CLOSED

3 - DUCT TEMPERATURE (G)
(A) WHEN DUCT t° ≥ 88°C

4 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° ≥ 88° C

5 - COMPARTMENT TEMPERATURE (G)

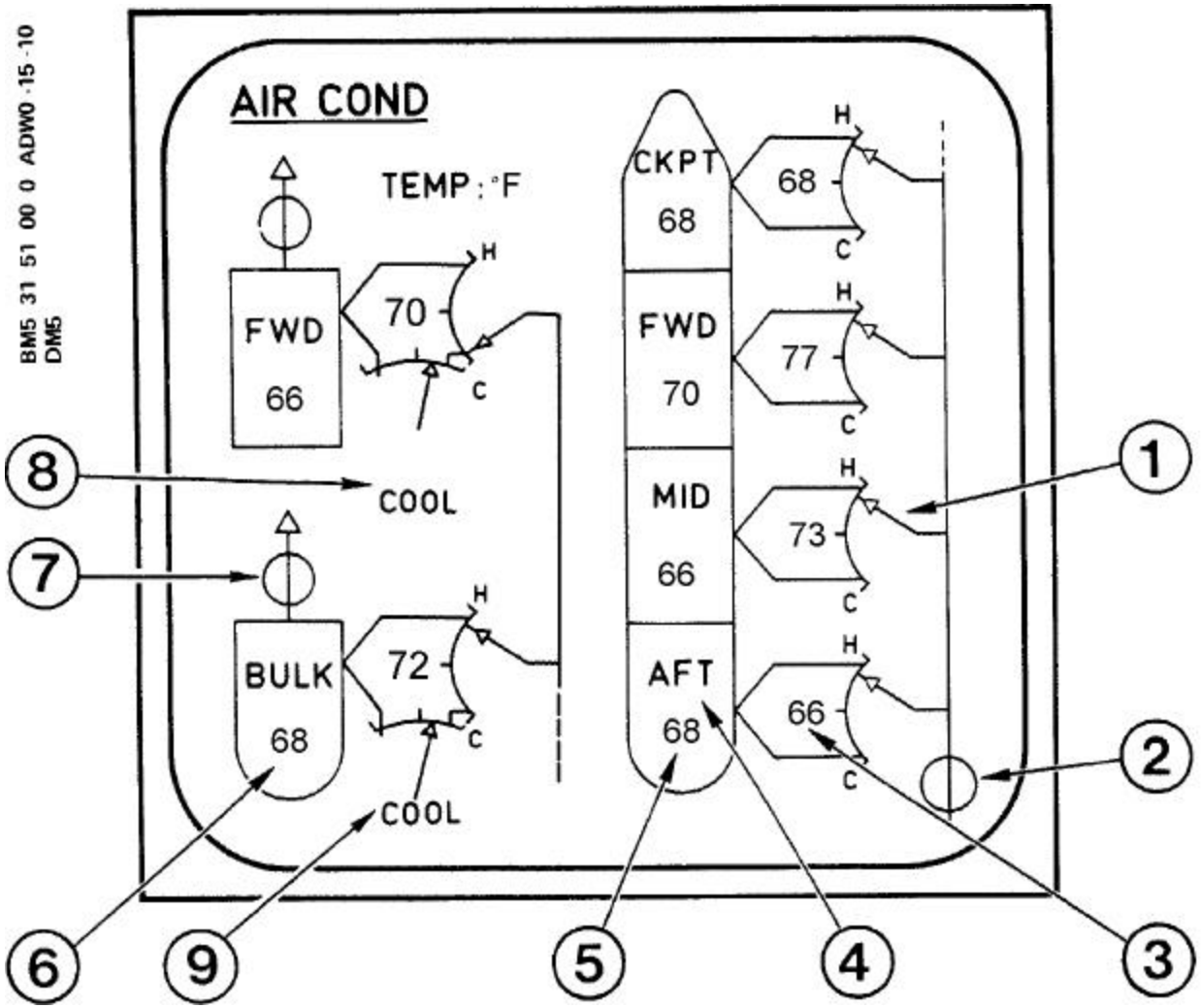
6 - CARGO COMPARTMENT TEMPERATURE (G)
FLASHES WHEN t° > 33°C

7 - CARGO ISOLATION VALVE

(G) : VALVE OPEN

(A) : VALVE CLOSED

Some A310s AIR COND - FWD and AFT Cargo Heat and Cooling



1 - TRIM AIR VALVE POSITION INDICATION (G)

H HOT VALVE 100 % OPEN
C - COLD - VALVE FULLY CLOSED
(A) WHEN HOT AIR SUPPLY VALVE CLOSED

2 - HOT AIR SUPPLY VALVE

(G) : VALVE OPEN

(A) : VALVE CLOSED

3 - DUCT TEMPERATURE (G)
(A) WHEN DUCT t° ≥ 88°C

4 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° ≥ 88° C

5 - COMPARTMENT TEMPERATURE (G)

6 - CARGO COMPARTMENT TEMPERATURE (G)
* FLASHES WHEN t° > 33°C

7 - CARGO ISOLATION VALVE

(G) : VALVE OPEN

(A) : VALVE CLOSED

8 - CARGO COOLING ON

9 - CARGO COOLING OFF

*Some A310s with FWD and AFT cargo heating and cooling do not have this feature.

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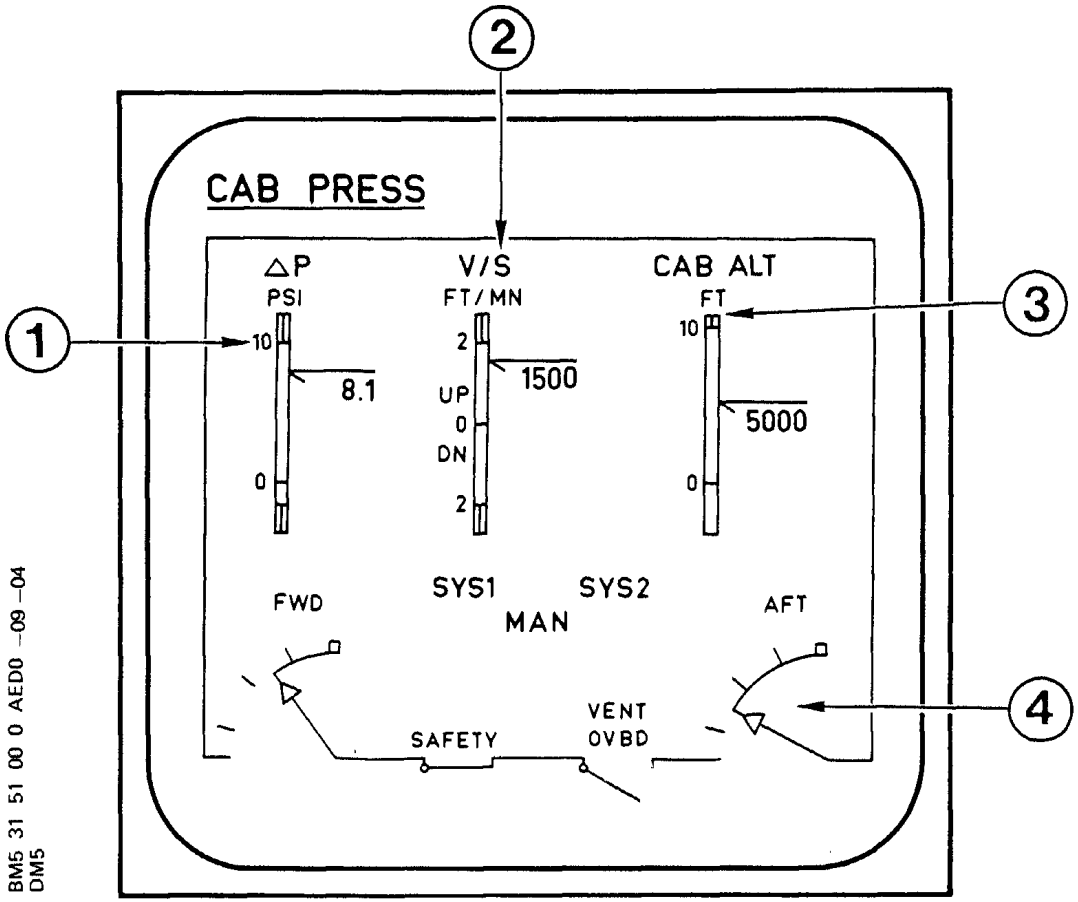
RH ECAM

CABIN PRESSURIZATION

PAGES



1 - CABIN DIFFERENTIAL PRESSURE (G)
FLASHES WHEN ΔP ≥ 8.6 PSI
(A) WHEN ΔP ≤ −1 PSI
≥ 10 PSI

2 - CABIN VERTICAL SPEED (G)
FLASHES WHEN V/S ≥ V/S SELECTED + 50 %
(A) WHEN V/S ≤ − 2000 Ft/mn
≥ 2000 Ft/mn

3 - CABIN ALTITUDE (G)
(R) WHEN CABIN ALTITUDE ≥ 10000 Ft

4 - REGULATING VALVE (G)
FLASHES WHEN AFT REGUL VALVE POSITION
DIFFERS FROM THE FWD REGUL VALVE POSITION MORE THAN 40%.
(A) WHEN OPEN ≥ 95% IN FLIGHT ONLY

A300/Some A310s CAB PRESS Page

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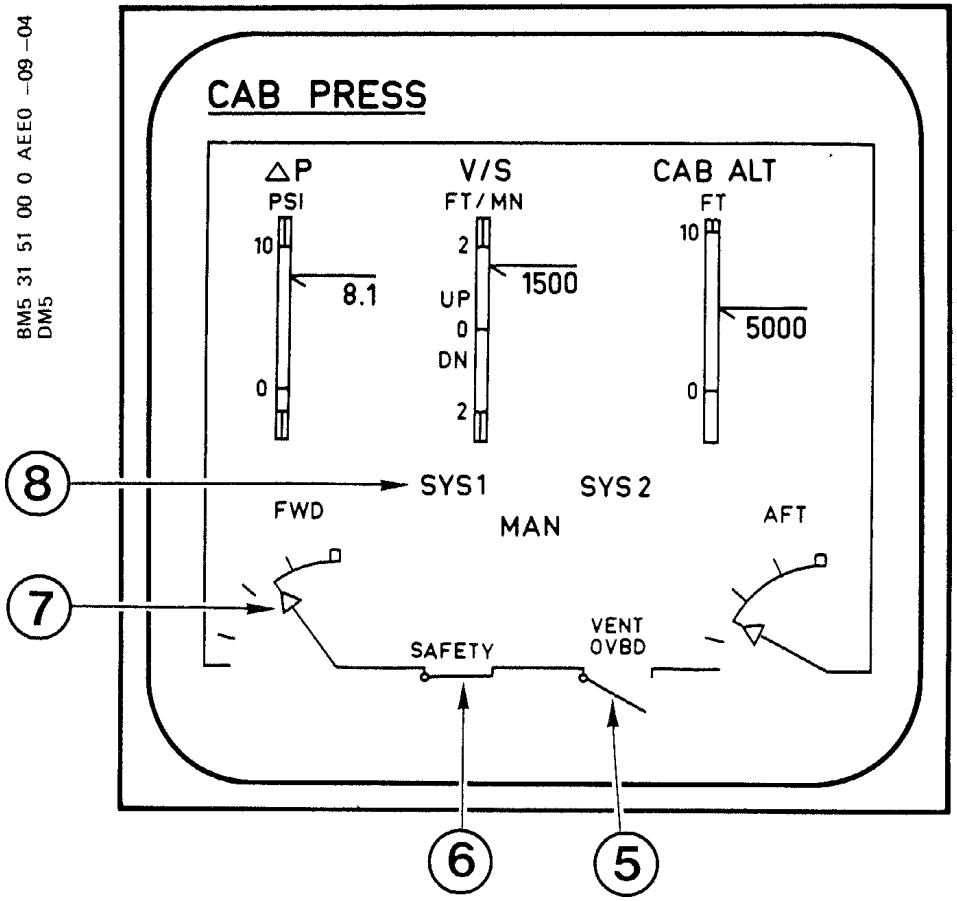
DM5



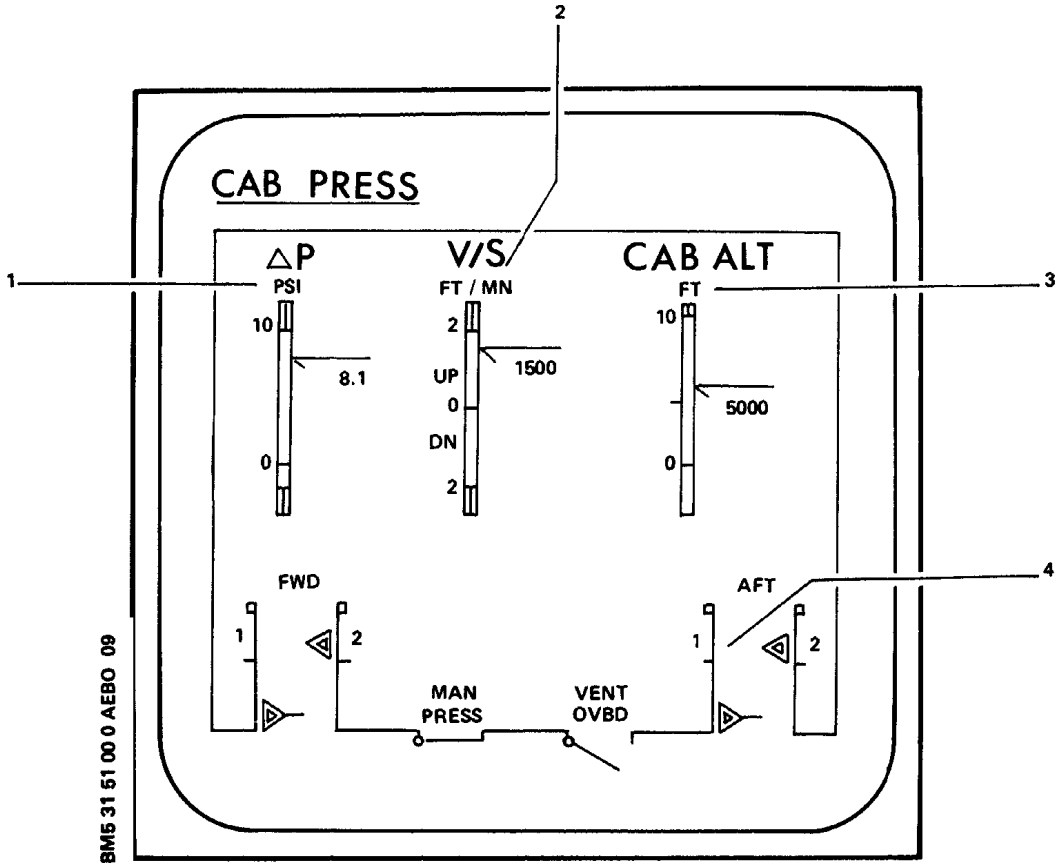
5 - EXTRACT VALVE
VENT OVBD (W)
(G) VALVE FULLY CLOSED
VENT OVBD (W)
(G) VALVE PARTIALLY OPEN
VENT OVBD (A)
(A) VALVE FULLY OPEN ONLY IN FLIGHT (STAYS (G) ON GROUND)

6 - FWD AFT SAFETY VALVES
SAFETY (W)
(G) VALVE FULLY CLOSED
SAFETY (A)
(A) VALVE OPEN

7 - REGULATING VALVE (G)
FLASHES WHEN AFT REGULATING VALVE POSITION DIFFERS FROM THE FWD REGULATING VALVE POSITION MORE THAN 40%
(A) WHEN OPEN ≥ 95% IN FLIGHT ONLY

8 - ACTIVE SYSTEM INDICATION
SYS 1 (G) WHEN ON
SYS 1 (A) WHEN FAULT OR SW OFF
NOT DISPLAYED WHEN NOT ACTIVE
SYS 2 (G) WHEN ON
SYS 2 (A) WHEN FAULT OR SW OFF
NOT DISPLAYED WHEN NOT ACTIVE
MAN (W) WHEN SYS 1 AND SYS 2 FAULT OR SW OFF

Some A310 CAB PRESS Page



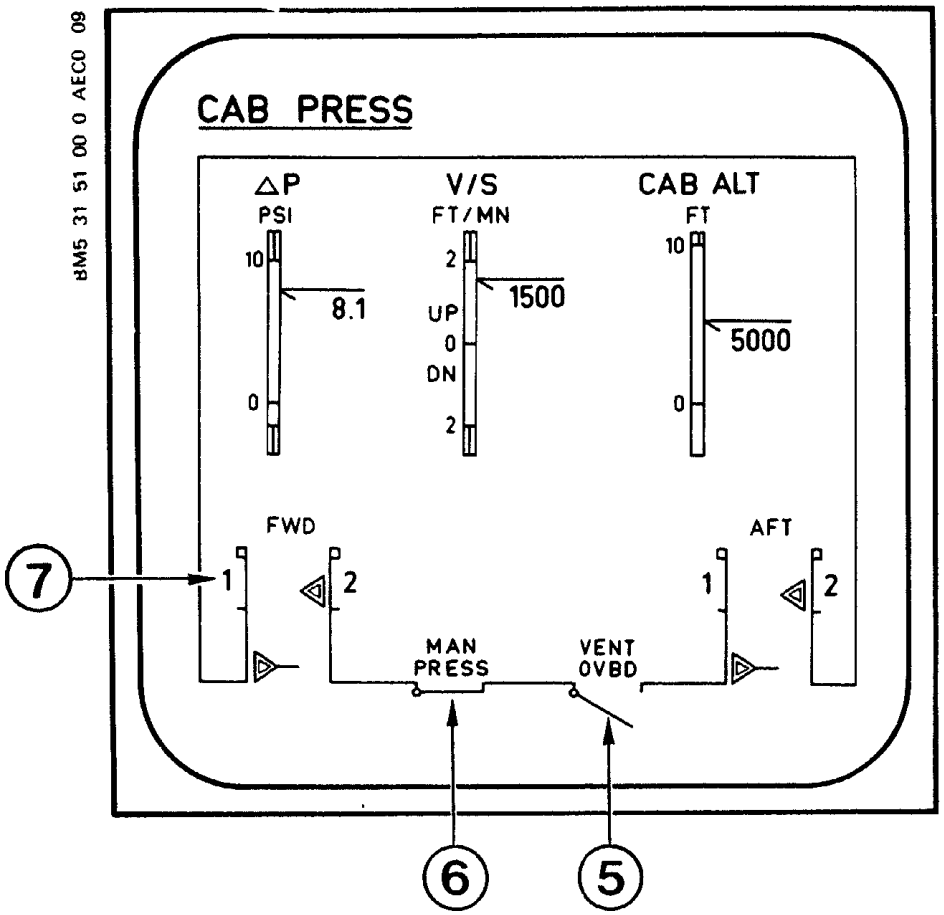
1–CABIN DIFFERENTIAL PRESSURE (G)
FLASHES WHEN ΔP ≥ 8.6PSI
(A) WHEN ΔP ≤ –1 PSI
≥10 PSI

2–CABIN VERTICAL SPEED (G)
FLASHES WHEN V/S ≥ V/S SELECTED+50%
(A) WHEN V/S ≤ –2000 Ft/mn
≥ 2000Ft/mn

3–CABIN ALTITUDE (G)
(R)WHEN CABIN ALTITUDE ≥ 10000 Ft

4 -REGULATING VALVE (G)
FLASHES WHEN FWD VALVE POSITION DIFFERS FROM THE AFT VALVE POSITION MORE THAN 40%
(A) WHEN OPEN ≥ 95% IN FLIGHT ONLY

Some A310 CAB PRESS Page



5 - EXTRACT VALVE

VENT OVBD (W)
(G) VALVE FULLY CLOSED

VENT OVBD (W)
(G) : VALVE PARTIALLY OPEN

VENT OVBD (A)
(A) : VALVE FULLY OPEN ONLY IN FLIGHT (STAYS (G) ON GROUND)

6 - CABIN DEPRESSURIZATION VALVE

MAN PRESS (W)
(G) : VALVE FULLY CLOSED

MAN PRESS (W)
(G) : VALVE PARTIALLY OPEN

MAN PRESS (A)
(A) : VALVE FULLY OPEN ONLY IN FLIGHT (STAYS (G) ON GROUND).

7 REGULATING VALVE (G)
FLASHES WHEN AFT VALVE POSITION DIFFERS FROM THE FWD VALVE POSITION MORE THAN 40%.
(A) WHEN OPEN ≥ 95% IN FLIGHT ONLY

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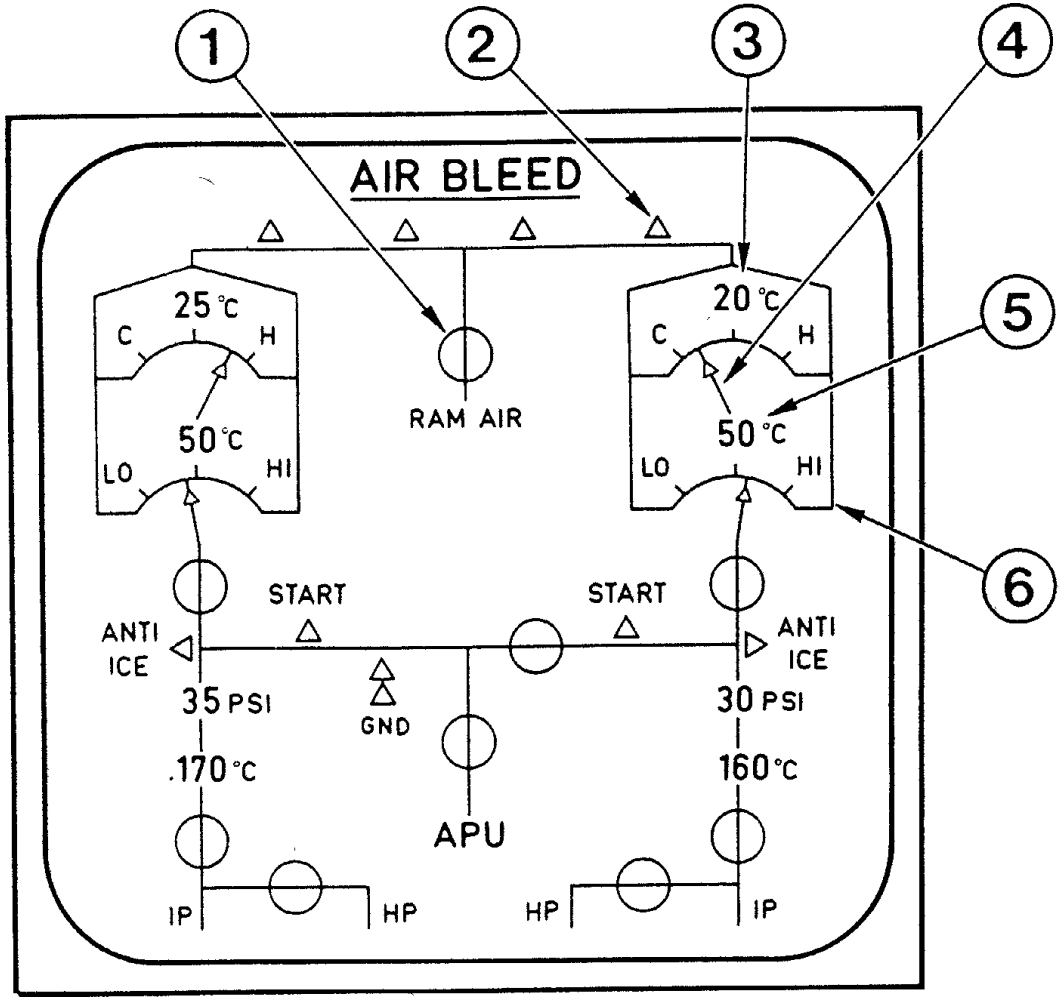
RH ECAM
AIR BLEED

PAGES

A300/A310 Air Bleed Page - GE and PW Engines



1 - RAM AIR INLET VALVE

(G) : VALVE OPEN

(G) : VALVE CLOSED

2 - COLD AIR DUCT SUPPLY (G)

(A) WHEN NO COLD AIR IS SUPPLIED

3 - PACK DISCHARGE TEMPERATURE (G)

(A) WHEN $t^{o} \leq -18^{o}C$

4 - PACK TEMPERATURE CONTROL VALVE (G)

C - COLD, VALVE CLOSED
H - HOT, VALVE FULLY OPEN

5 - TURBINE INLET TEMPERATURE (G)

FLASHES WHEN $t^{o} \geq 95^{o}$ C AND $< 120^{o}$C
(A) WHEN $t^{o} \geq 120^{o}$ C

6 - PACK SYMBOL (W)

(A) WHEN PACK INOPERATIVE, PACK VALVE CLOSED AND ENG START NOT SELECTED

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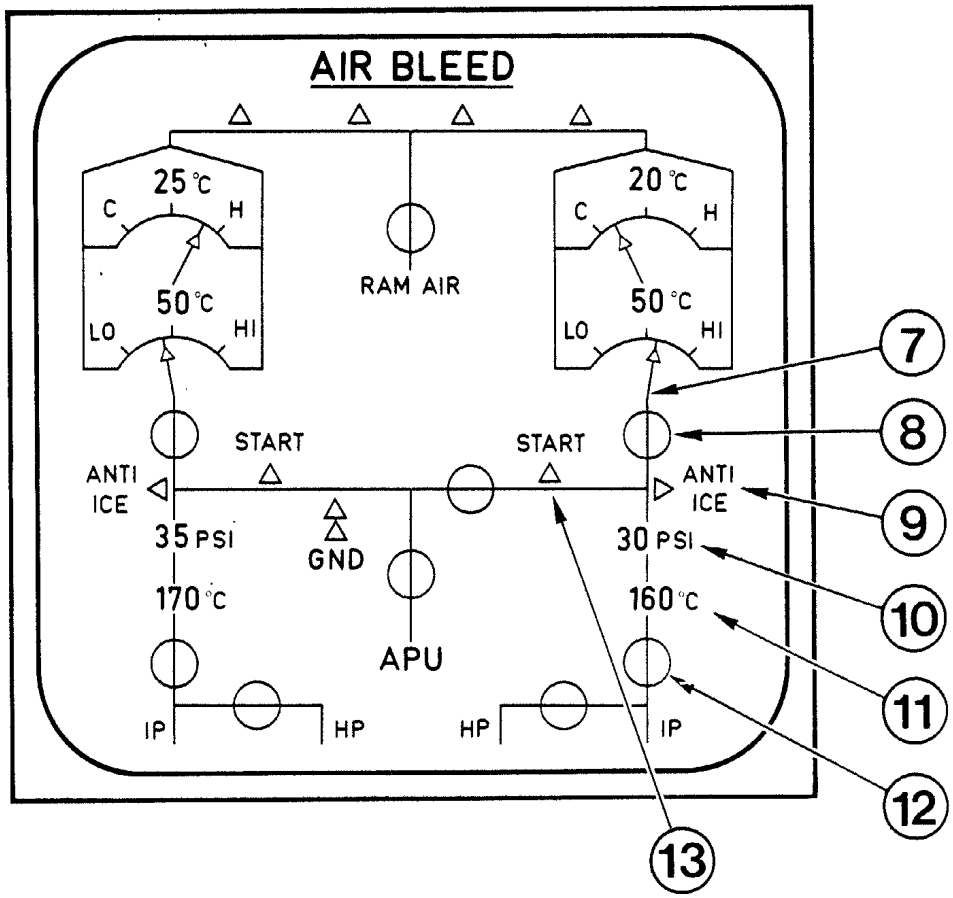
A300/A310 Air Bleed Page - GE and PW Engines



7 - PACK FLOW (G)
(A) WHEN ΔP ≤ 0.50 PSI

8 - PACK VALVE
(G) : VALVE OPEN
(A) : VALVE CLOSED

9 - WING ANTI-ICE (NOT DISPLAYED)
ANTI ICE (G) (W) — WHEN WING SUPPLY P/B SWITCH IS SELECTED ON

10 - PRECOOLER INLET PRESSURE (G)
(A) WHEN P ≤ 8 PSI
> 57 PSI
XX(A) IF POWER SUPPLY LOSS FOR CONTROLLER INDICATOR

11 - PRECOOLER OUTLET TEMPERATURE (G)
(A) WHEN t° > 207°C/255°C
HIGHER VALUE VALID WHEN WING ANTI ICE ON

12 - BLEED VALVE
(G) : VALVE OPEN
(A) : VALVE CLOSED

13 - ENGINE START (NOT DISPLAYED)
START (W) (G) — WHEN ENG START SELECTOR IS IN START A OR B OR CRANK POSITION

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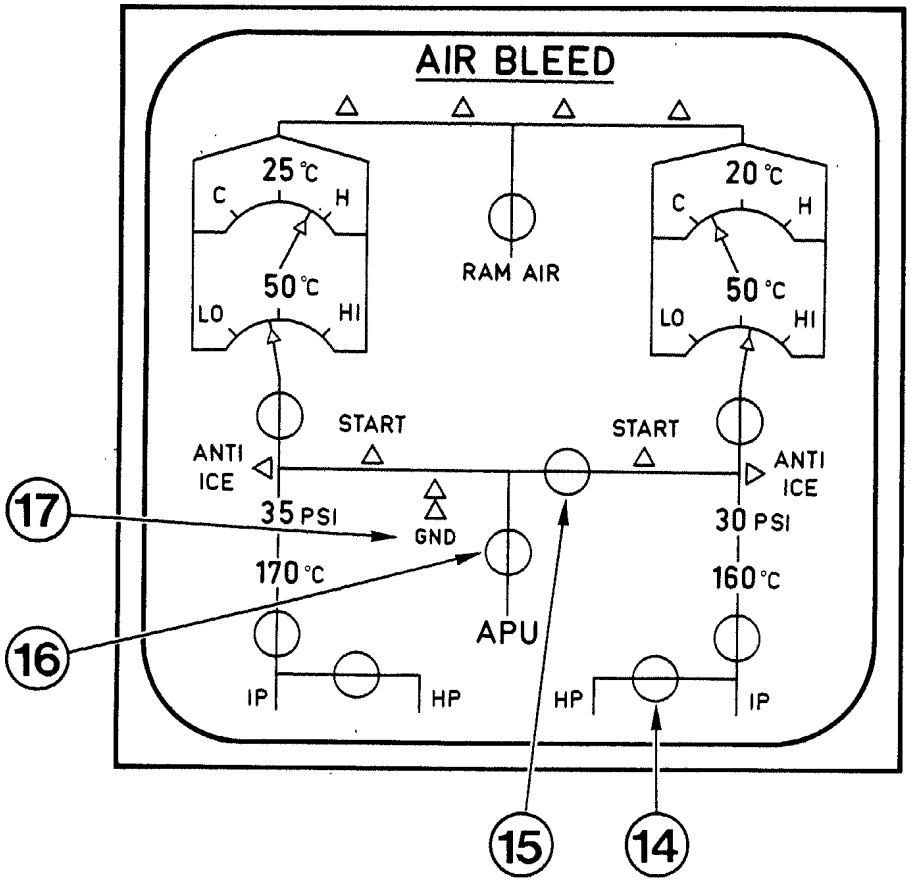
A300/A310 Air Bleed Page - GE and PW Engines



14 - HP VALVE

- AUTOMATIC MODE
  - (G) : VALVE OPEN
  - (G) : VALVE CLOSED
- OFF MODE (HP VALVE P/B SWITCH IS SELECTED OFF)
  - (A) : VALVE OPEN
  - (A) : VALVE CLOSED

} ACCORDING TO THE VALVE POSITION

15 - X-FEED VALVE

- (G) : VALVE OPEN
- (G) : VALVE CLOSED

16 - APU BLEED VALVE

- (G) : VALVE OPEN
- (G) : VALVE CLOSED
- (W) : REPLACES VALVE INDICATION WHEN APU MASTER SW IS IN OFF POSITION

17 - GROUND SUPPLY (NOT DISPLAYED IN FLIGHT(

- GND (W) : (INDEPENDANT OF GROUND SUPPLY CONNECTION)

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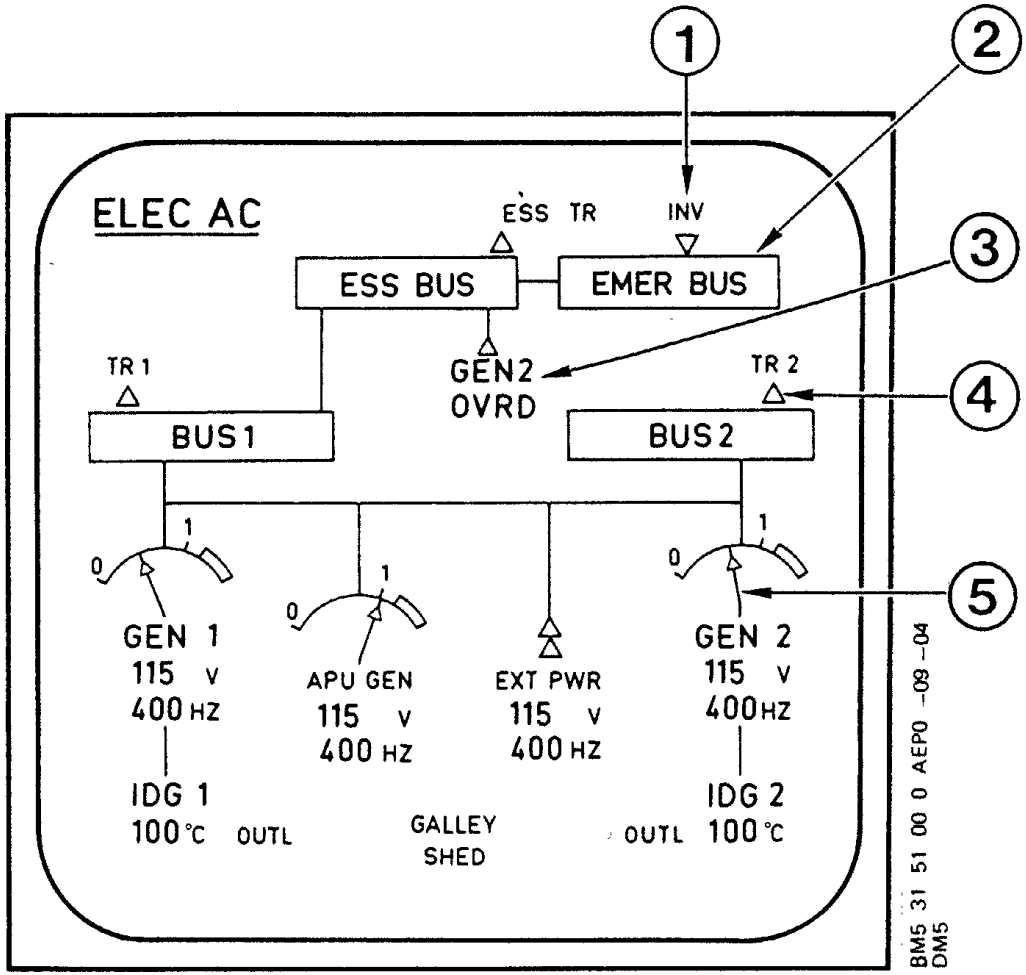
RH ECAM

ELEC AC

PAGES

A300/A310 ELEC AC Page - GE and PW Engines



1 · EMERGENCY INVERTER (W)

2 · EMERGENCY BUS

3 · GENERATOR 1 OR 2 OVERRIDES AC BUS 1

GEN 1 OVRD (W) : GENERATOR 1 SUPPLIES AC ESS BUS

GEN 2 OVRD (W) : GENERATOR 2 SUPPLIES AC ESS BUS

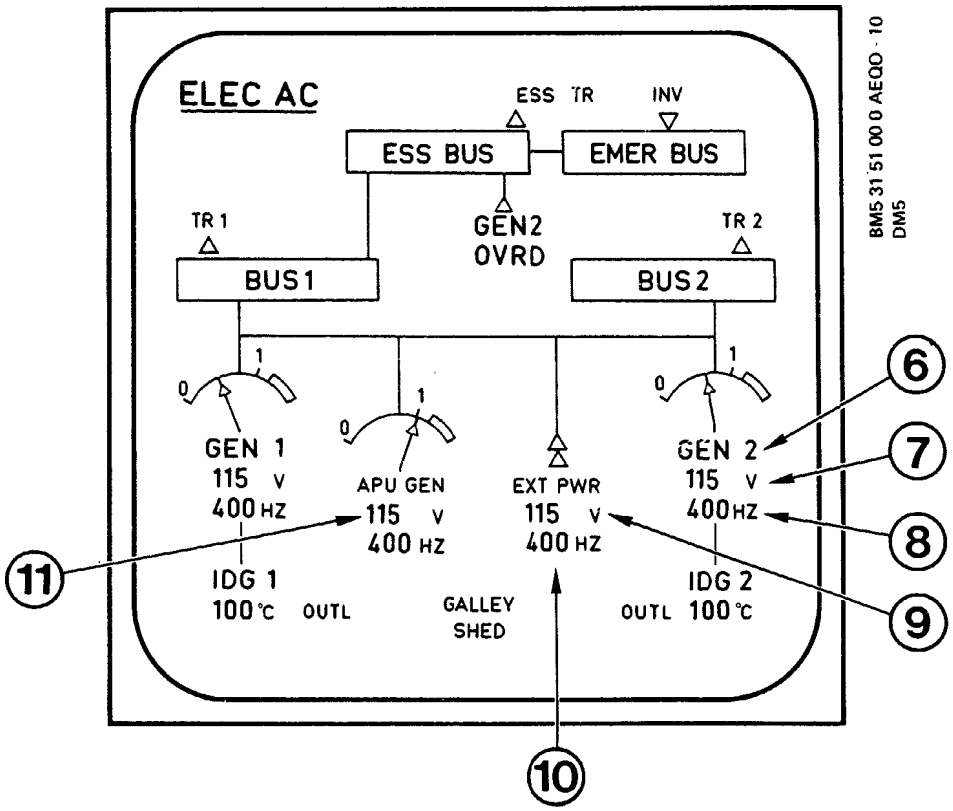
GEN OVRD (W) : NO OVERRIDE

4 · AC BUS AND TRANSFORMER RECTIFIER

TR 2 (W)
(W)
BUS 2 (G) WHEN SUPPLIED
TR 2 (A)
(A)
BUS 2 (A) WHEN NOT SUPPLIED

5 · GENERATOR LOAD (G)
(A) WHEN LOAD ≥ 110%
NOT DISPLAYED WHEN GEN P/B SWITCH IS SELECTED OFF/R

A300/A310 ELEC AC Page - GE and PW Engines



6 - GEN 2 (W)
(A) WHEN GEN P/B SWITCH IS SELECTED OFF/R

7 - GENERATOR VOLTAGE (G)
(A) WHEN VOLTAGE ⩽ 110V
⩾ 120V
OFF (W) REPLACES VOLTAGE INDICATION WHEN GEN P/B SWITCH IS SELECTED OFF/R

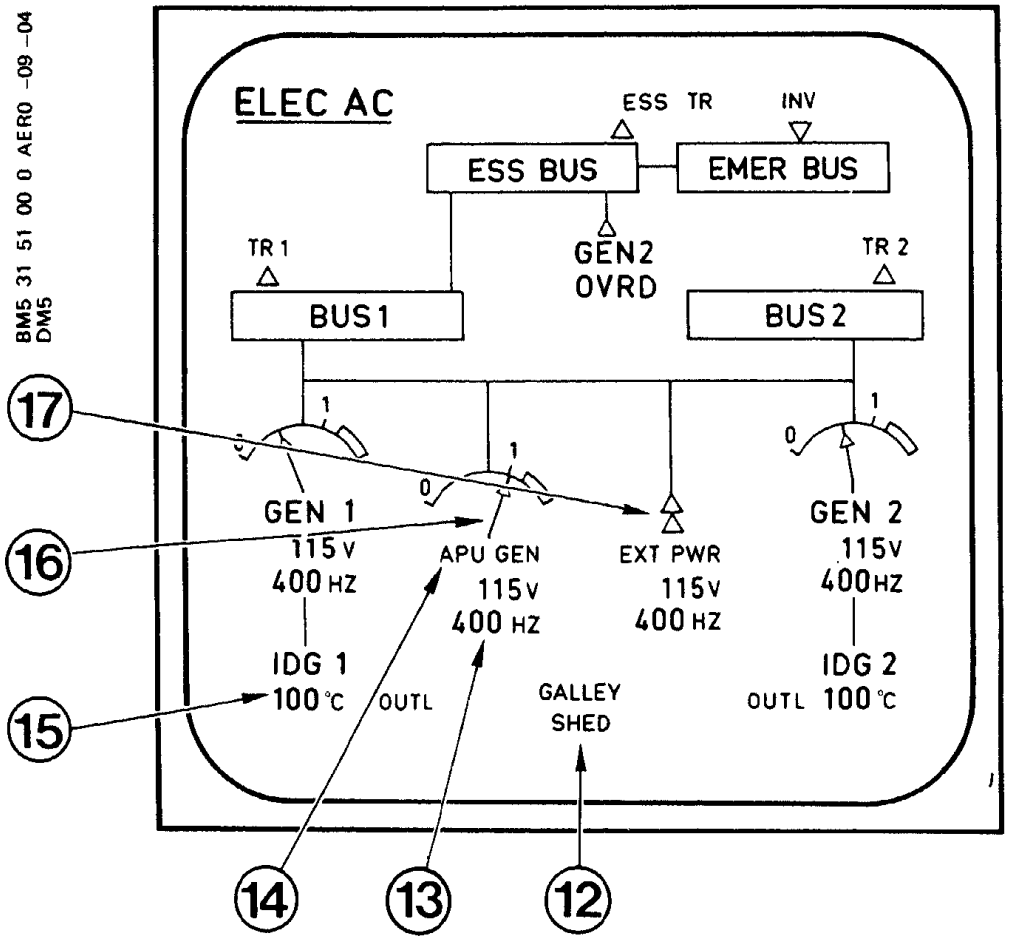
8 - GENERATOR FREQUENCY (G)
(A) WHEN FREQUENCY ⩽ 390 HZ
⩾ 410 HZ
NOT DISPLAYED WHEN GEN P/B SWITCH IS SELECTED OFF/R

9 - EXTERNAL POWER VOLTAGE (G)
(A) WHEN VOLTAGE ⩽ 110V
⩾ 120V
NOT DISPLAYED WHEN EXTERNAL POWER VOLTAGE ⩽ 50V

10 - EXTERNAL POWER FREQUENCY (G)
(A) WHEN FREQUENCY ⩽ 390 HZ
⩾ 410 HZ
NOT DISPLAYED WHEN EXTERNAL POWER VOLTAGE ⩽ 50V

11 - APU GENERATOR VOLTAGE (G)
(A) WHEN VOLTAGE ⩽ 110V
⩾ 120V
OFF (W) REPLACES VOLTAGE INDICATION WHEN APU GEN P/B SWITCH IS SELECTED OFF/R - NOT DISPLAYED WHEN APU MASTER SW IS IN OFF POSITION

A300/A310 ELEC AC Page - GE and PW Engines



12 - ~~GALLEY SHED~~ N/A FedEx Airbus Fleet Aircraft

13 - APU GENERATOR FREQUENCY (G)
(A) WHEN FREQUENCY ⩽ 390 HZ
⩾ 416 HZ
NOT DISPLAYED WHEN APU MASTER SW IS IN OFF POSITION
OR APU GEN P/B SWITCH IS SELECTED OFF/R

14 APU GEN (W)
(A) WHEN APU GEN P/B SWITCH IS SELECTED OFF/R AND
APU MASTER SW IS IN ON POSITION

15 - IDG OUTLET OIL TEMPERATURE (G)
FLASHES WHEN t° ⩾ 142°C
(A) WHEN t° ⩾ 185°C

16 - APU GENERATOR LOAD (G)
(A) WHEN LOAD ⩾ 110 %
△ (W) REPLACES LOAD INDICATION WHEN APU MASTER SWITCH
IS IN OFF POSITION

17 - EXT PWR AND △ (W) NOT DISPLAYED IN FLIGHT

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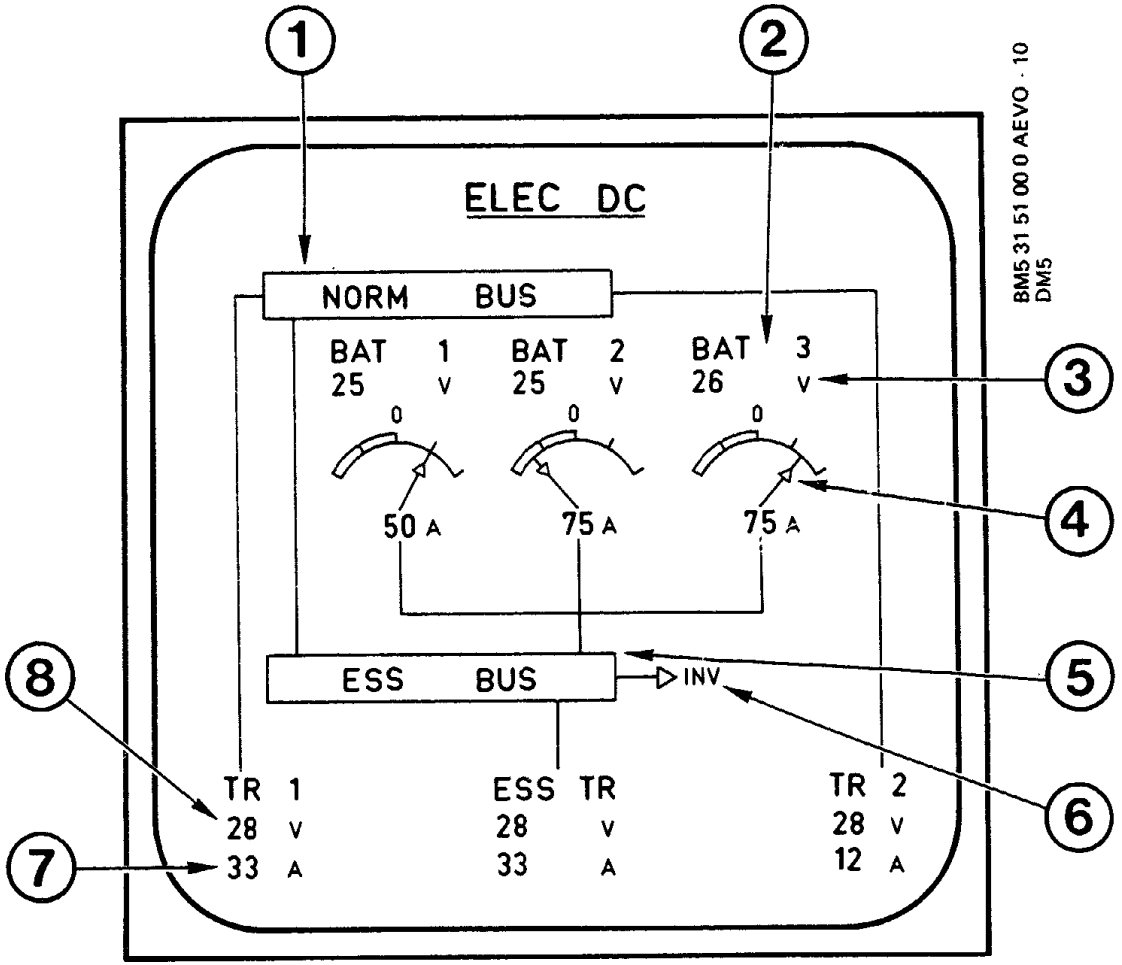
RH ECAM

ELEC DC

PAGES

A300/A310 ELEC DC Page - GE and PW Engines



1 - NORMAL BUS

NORM BUS (G) WHEN SUPPLIED

NORM BUS (A) WHEN NOT SUPPLIED

2 - BAT 3 (W)
(A) WHEN BAT P/B SWITCH IS SELECTED OFF/R

3 - BATTERY VOLTAGE (G)
(A) WHEN VOLTAGE ⩽ 25V
⩾ 31V

4 - BATTERY CURRENT (G)
(A) WHEN CURRENT ⩽ −5A
OFF (W) REPLACES DIGITAL AND ANALOG INDICATION WHEN BAT P/B SWITCH IS SELECTED OFF/R AND BATTERY CONTACTOR OFF
ARROW AND DIGITAL INDICATION DISAPPEAR WHEN CONTACTOR OFF

5 - ESSENTIAL BUS

ESS BUS (G) WHEN SUPPLIED

ESS BUS (A) WHEN NOT SUPPLIED

6 - EMERGENCY INVERTER (W)

7 - TRANSFORMER RECTIFIER CURRENT (G)
FLASHES WHEN I ⩽ 6A

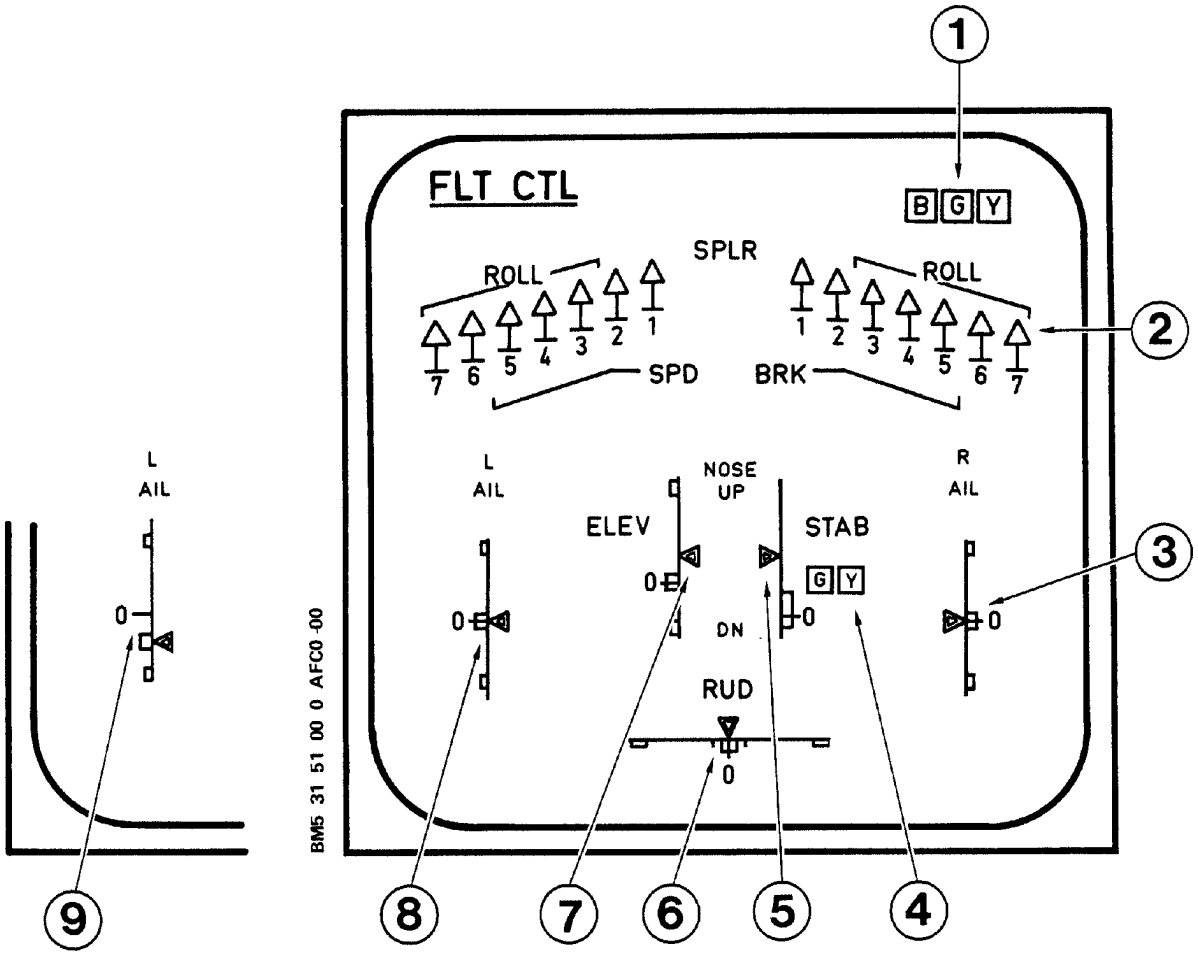
8 - TRANSFORMER RECTIFIER VOLTAGE (G)
(A) : VOLTAGE ⩽ 25 V
⩾ 31 V

RH ECAM

FLIGHT CONTROL

PAGE

A300/A310 FLT CTL Page/All Speed Aileron Droop Mode



1 - SERVO CONTROL HYD PRESSURE (G)
(A) WHEN THERE IS A SERVO CONTROL LOW PRESSURE

2 - SPOILER POSITION INDICATION

- (G) SPOILER EXTENDED
- (A) SPOILER EXTENDED AND FAULT
- (G) SPOILER RETRACTED
- (A) SPOILER RETRACTED AND FAULT
- (G) FLASHES WHEN SPOILER EXTENDED ON GROUND AND SPEED ≥ 70 KT

3 - AILERON POSITION (G)
4 - SERVO CONTROL HYD PRESSURE (G)
(A) WHEN THERE IS A SERVO CONTROL LOW PRESSURE
5 - HORIZONTAL STABILIZER POSITION (G)
6 - RUDDER POSITION (G)
7 - ELEVATOR POSITION (G)
8 - WHEN SLATS RETRACTED
9 - WHEN SLATS EXTENDED

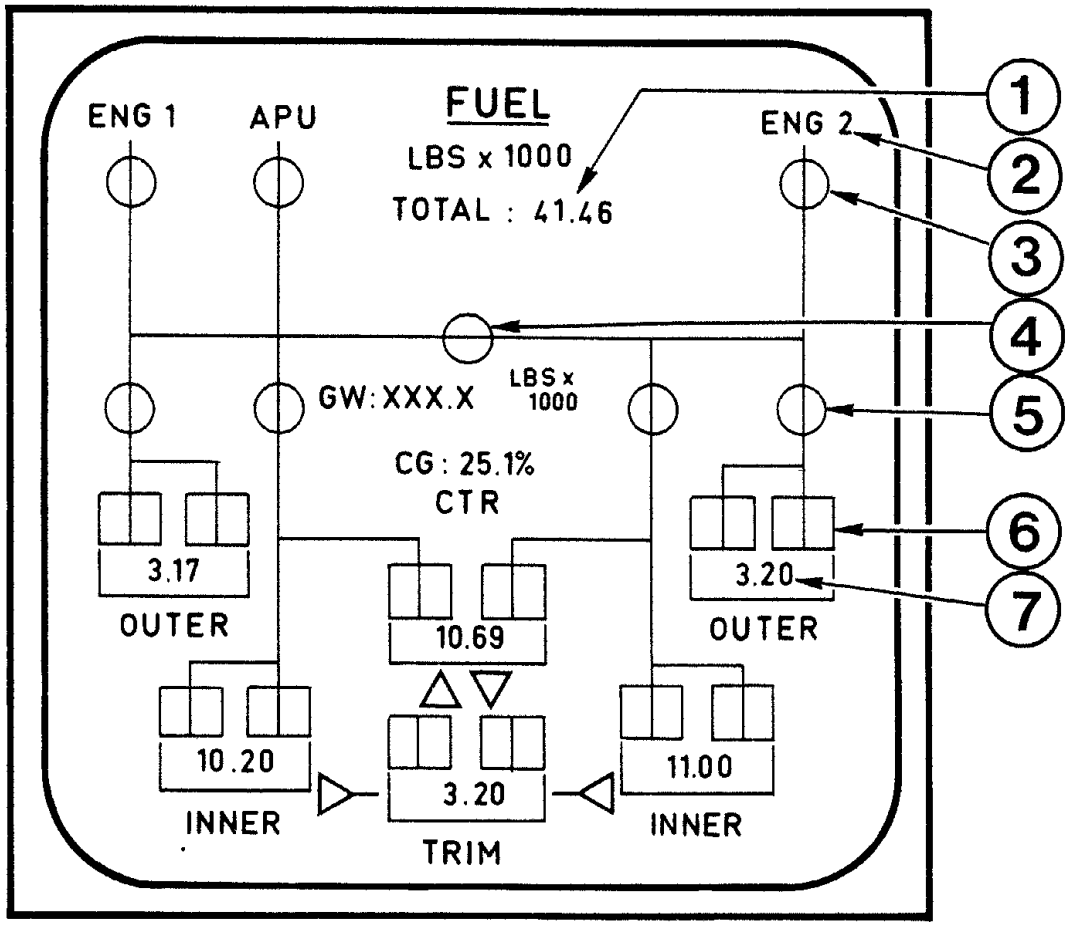
RH ECAM

FUEL

PAGE

(WITH TRIM TANK)

A300 FUEL Page - GE CF6-80C2A5F (With Trim Tank Configuration)



1 - TOTAL FUEL QUANTITY (G)
2 - ENG 2 (W)
(A) : WHEN NO FUEL PRESSURE
3 - LP VALVE (FIRE VALVE)
(G) : VALVE OPEN
(A) : VALVE OPEN WITHOUT FUEL PRESSURE
(A) : VALVE CLOSED
4 - X-FEED VALVE
(G) : VALVE OPEN
(A) : VALVE OPEN WITHOUT FUEL PRESSURE
(G) : VALVE CLOSED
5 - INNER AND OUTER TANK ISOLATION VALVE
(G) : VALVE OPEN
(A) : VALVE OPEN WITHOUT FUEL PRESSURE
(A) : VALVE CLOSED
6 - OUTER TANK PUMP
(G) : PUMP ON AND NORMAL PRESSURE
(A) : PUMP ON AND LOW PRESSURE
(A) : PUMP OFF
7 - OUTER TANK FUEL QUANTITY (G)
FLASHES WHEN FUEL UNBALANCED ≥ 6.0 LBS x 1000

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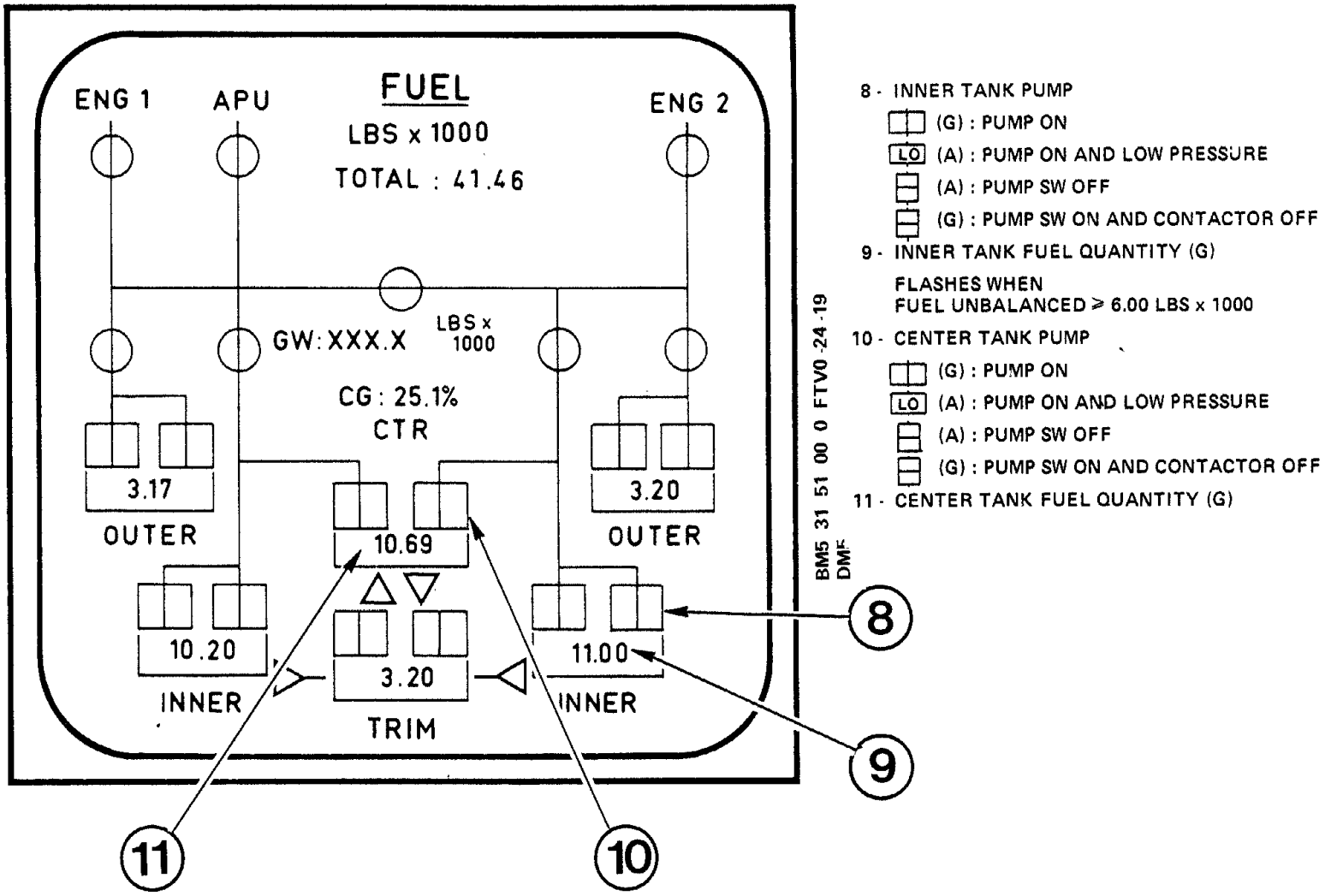
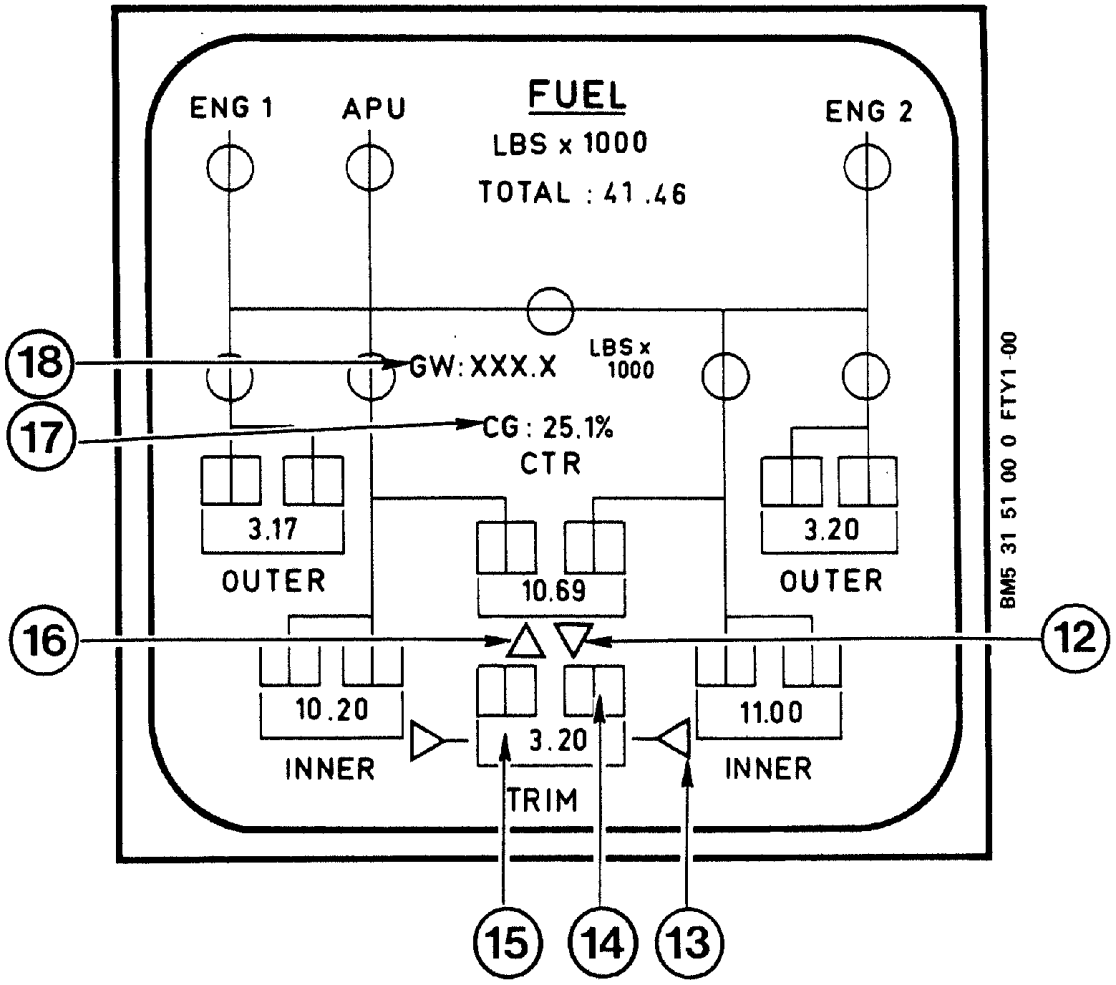
A300 FUEL Page - GE CF6-80C2A5F (With Trim Tank Configuration)



A300 FUEL Page - GE CF6-80C2A5F (With Trim Tank Configuration)



12 - TRANSFER INDICATION FROM CTR TO TRIM TANK
- (G) : AFT TRANSFER
- (A) : AFT TRANSFER FAULT OR NOT ALLOWED

13 - TRANSFER INDICATION FROM INNER TO TRIM TANK
- (G) : AFT TRANSFER
- (A) : AFT TRANSFER FAULT OR NOT ALLOWED

14 - TRIM TANK PUMP
- (G) : PUMP ON
- (A) : PUMP ON AND LOW PRESSURE
- (A) : PUMP SW OFF
- (G) : PUMP SW ON AND CONTACTOR OFF

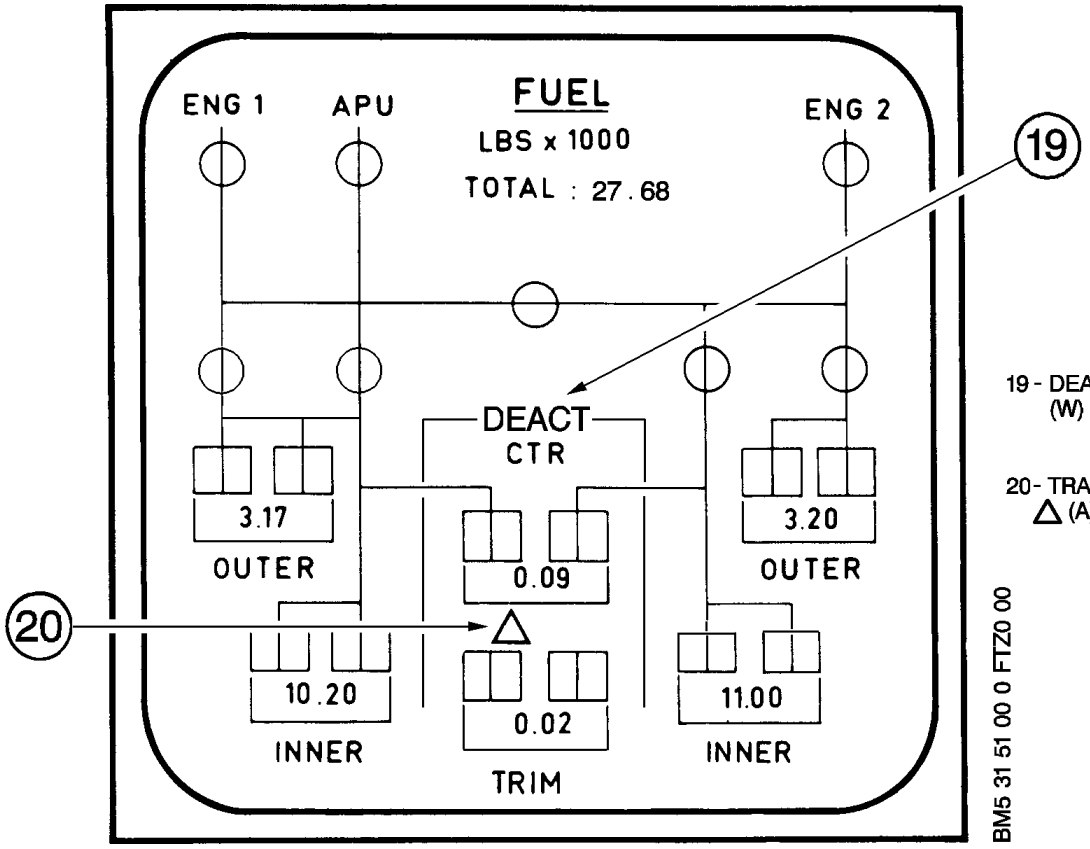
15 - TRIM TANK FUEL QUANTITY (G)

16 - TRANSFER INDICATION FROM TRIM TO CTR TANK
- (W) : NO TRANSFER, WHEN TRANSFER CONTROL FAULT
- (G) : FWD TRANSFER
- (A) : FWD TRANSFER FAULT

17 - CG INDICATION (G)
- (A) : WHEN CG > 38 % (CRUISE)
- (A) : WHEN CG > 36 % (LANDING)
- (A) : WHEN CG ≤ 17.5 %

18 - GROSS WEIGHT INDICATION (G)

A300 FUEL Page - GE CF6-80C2A5F (With Trim Tank Configuration)



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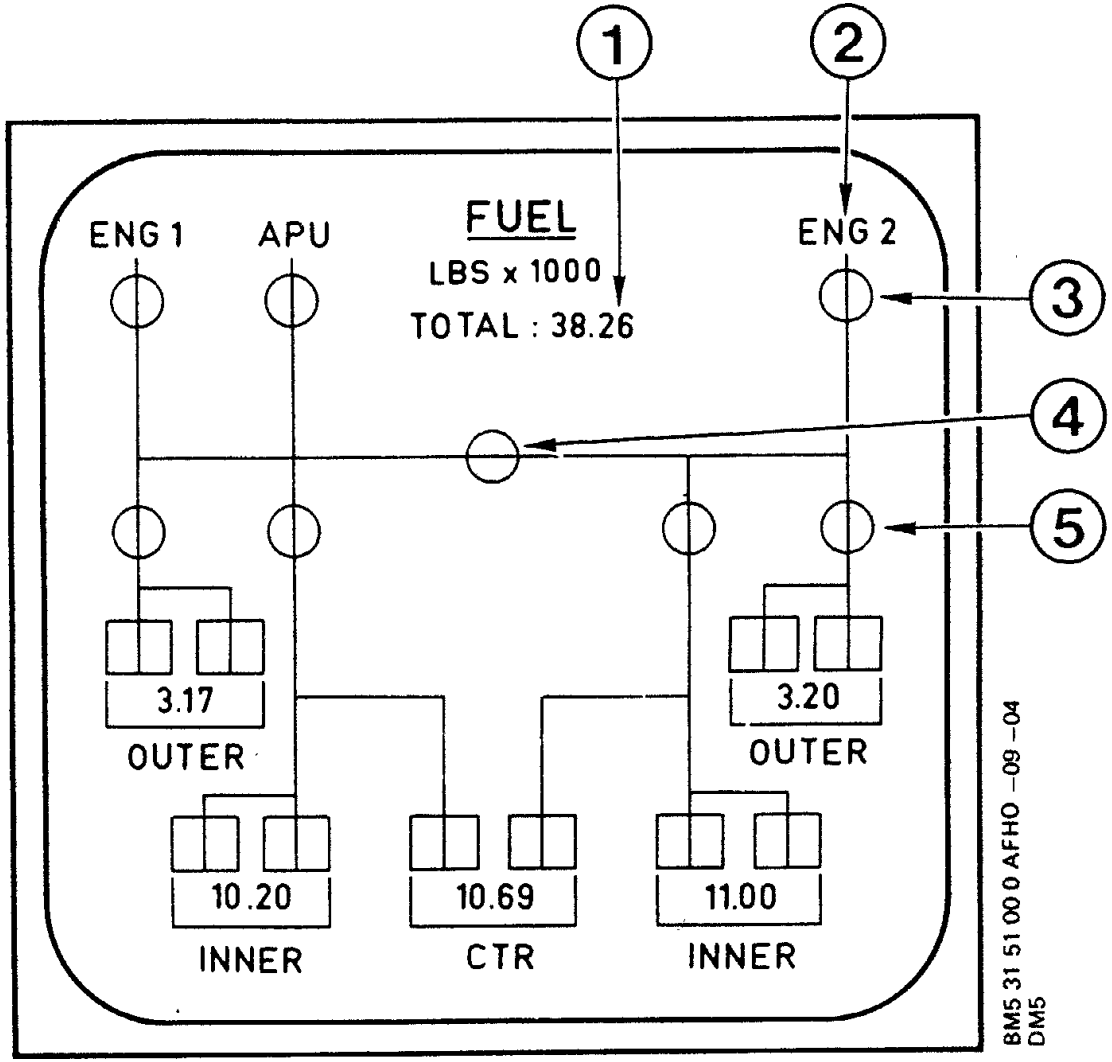
RH ECAM

FUEL

PAGE

(NO TRIM TANK)

A310 FUEL Page - CF6-80A3/PW JT9D-7R4 (No Trim Tank)



1 TOTAL FUEL QUANTITY (G)

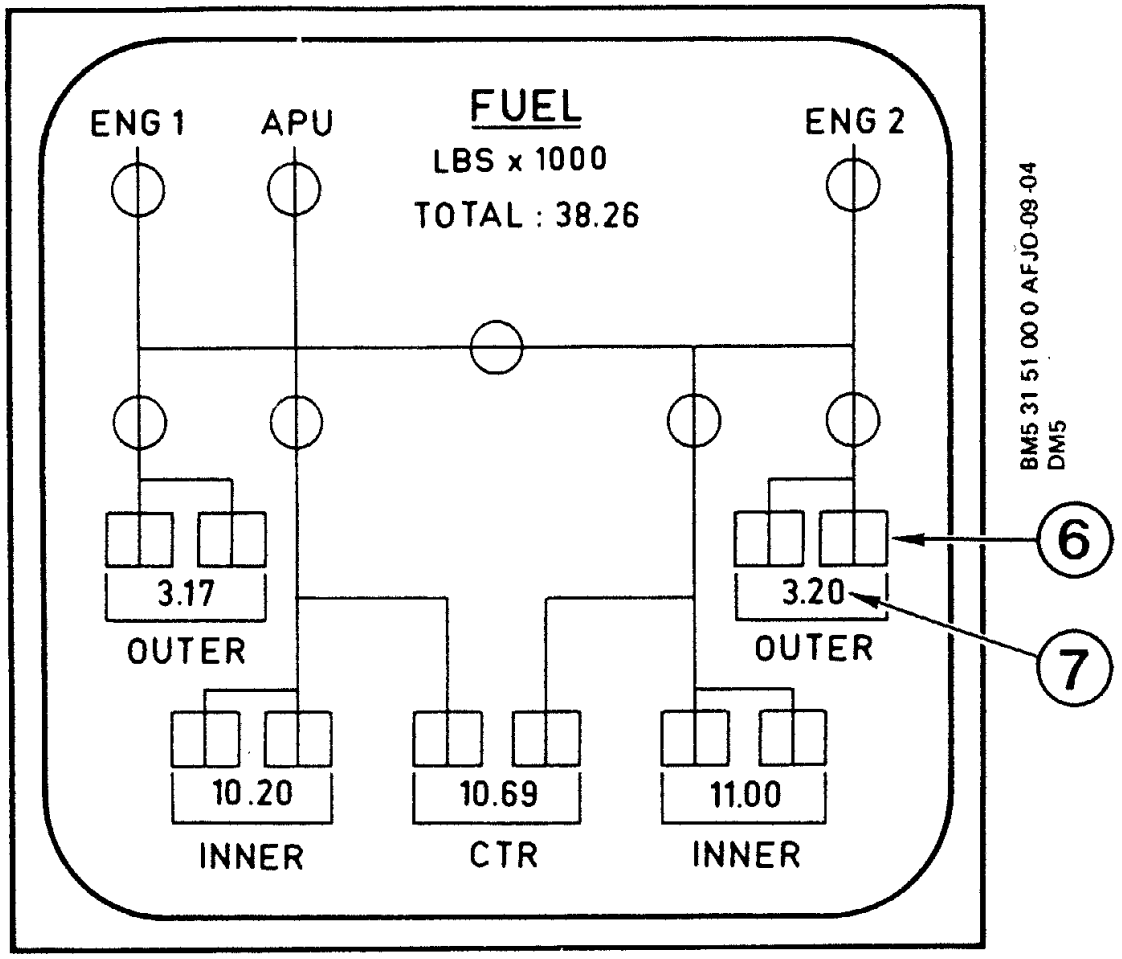
2 - ENG 2 (W)
(A) WHEN NO FUEL PRESSURE

3 - LP VALVE (FIRE VALVE)
(G) : VALVE OPEN
(A) : VALVE OPEN WITHOUT FUEL PRESSURE
(A) : VALVE CLOSED

4 - X-FEED VALVE
(G) : VALVE OPEN
(A) : VALVE OPEN WITHOUT FUEL PRESSURE
(G) : VALVE CLOSED

5 - INNER AND OUTER TANK ISOLATION VALVE
(G) : VALVE OPEN
(A) : VALVE OPEN WITHOUT FUEL PRESSURE
(A) : VALVE CLOSED

A310 FUEL Page - CF6-80A3/PW JT9D-7R4 (No Trim Tank)



6 - OUTER TANK PUMP

(G) : PUMP ON AND NORMAL PRESSURE

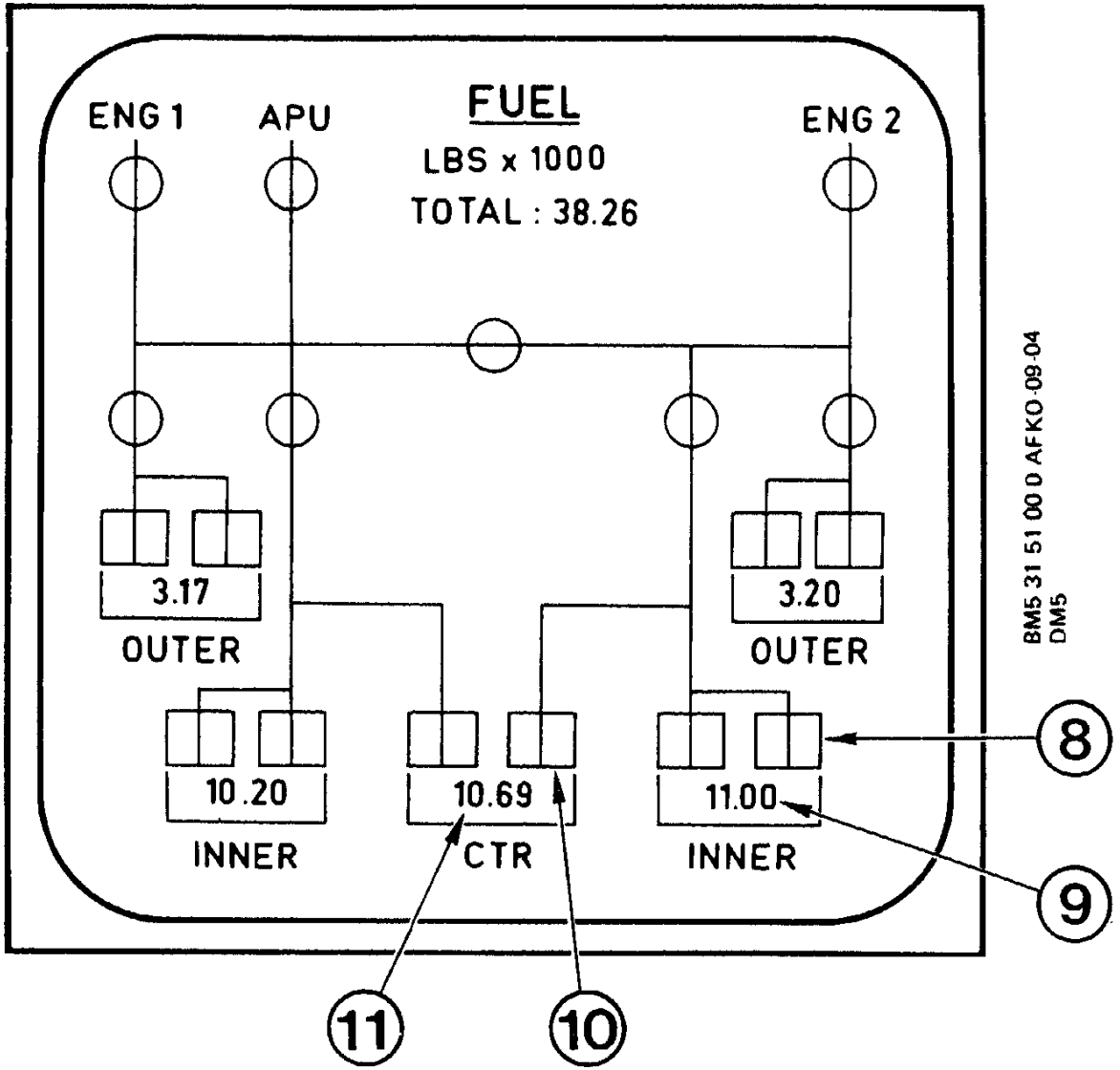
LO (A) : PUMP ON AND LOW PRESSURE

(A) : PUMP OFF

7 - OUTER TANK FUEL QUANTITY (G)

FLASHES WHEN FUEL UNBALANCED ≥ 6.0 LBS x 1000

A310 FUEL Page - CF6-80A3/PW JT9D-7R4 (No Trim Tank)



8 - INNER TANK PUMP

(G) : PUMP ON

LO (A) : PUMP ON AND LOW PRESSURE

(A) : PUMP SW OFF

(G) . PUMP SW ON AND CONTACTOR OFF

9 - INNER TANK FUEL QUANTITY (G)

FLASHES WHEN
FUEL UNBALANCED ≥ 6.0 LBS x 1000

10 - CENTER TANK PUMP

(G) : PUMP ON

LO (A) : PUMP ON AND LOW PRESSURE

(A) : PUMP SW OFF

(G) : PUMP SW ON AND CONTACTOR OFF

11 - CENTER TANK FUEL QUANTITY (G)

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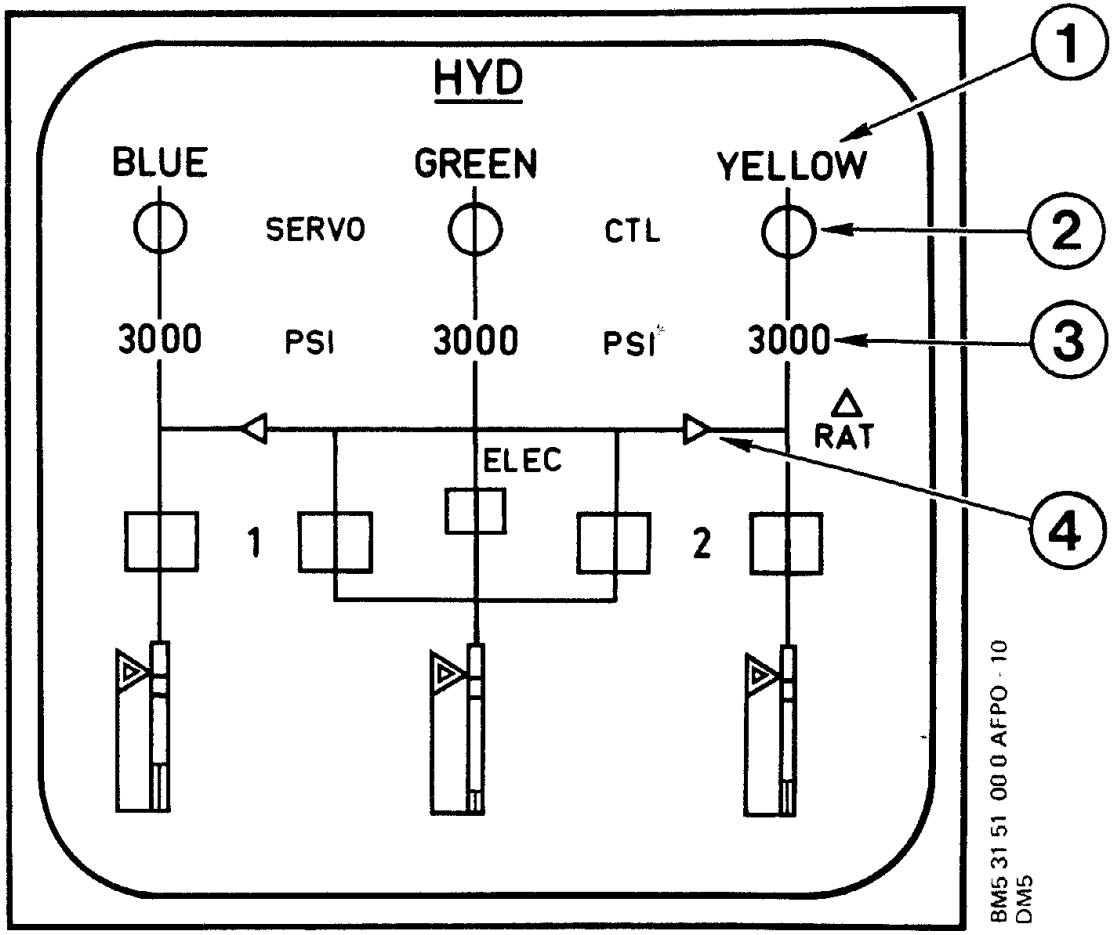
RH ECAM

HYDRAULIC

PAGE

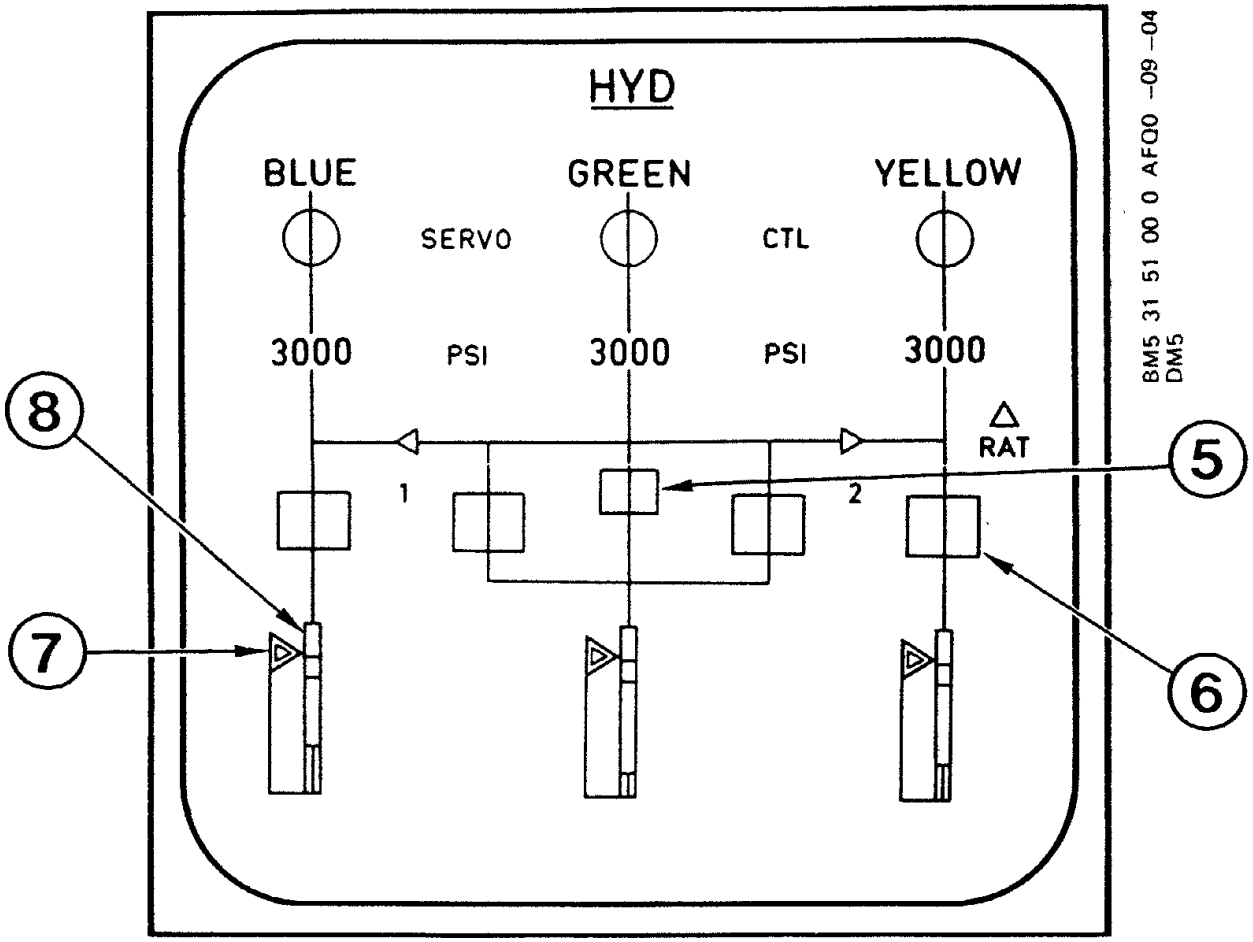


1 - YELLOW (W)
(A) WHEN THERE IS A SERVO CONTROL LOW PRESSURE

2 - SERVO CONTROL VALVE
(G) : VALVE OPEN
(A) : VALVE OPEN AND PRESSURE < 1450 PSI
(A) : VALVE CLOSED

3 - COLLECTOR PRESSURE (G)
(A) WHEN PRESSURE < 1450 PSI

4 - POWER TRANSFER UNIT
(G) : WHEN PTU P/B SWITCH IS SELECTED OFF
(G) : WHEN PTU P/B SWITCH IS SELECTED ON



5 · ELECTRIC PUMPS

(G) · PUMPS OFF

(G) : ONE PUMP ON

LO (A) : PUMP ON AND LOW PRESSURE

6 · ENGINE PUMP

(A) · PUMPS OFF

(G) : ONE PUMP ON

LO (A) : PUMP ON AND LOW PRESSURE

7 · HYDRAULIC FLUID QUANTITY (G)

(A) WHEN QUANTITY ⩽ 5 LITERS

8 · NORMAL FULL RESERVOIR MARK (W)

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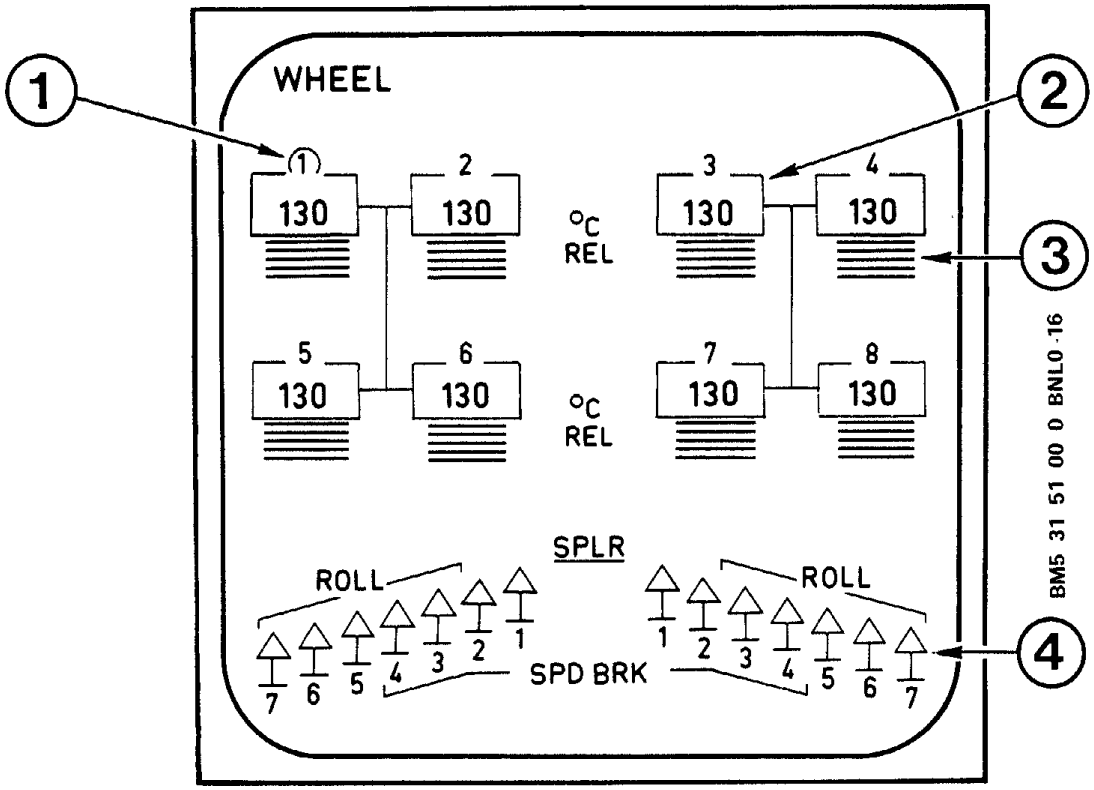
RH ECAM

WHEEL

PAGE



1 - (1) INDICATES WHEEL WITH THE HOTTEST TEMPERATURE
IF TEMPERATURE ABOVE 100°C

2 - BRAKES TEMPERATURE (G)
(A) WHEN TEMPERATURE ≥ 260°C

3 - BRAKE RELEASE

(G) : BRAKE RELEASED
NOT DISPLAYED WHEN BRAKE NOT RELEASED

4 - SPOILER POSITION INDICATION

(G) : SPOILER EXTENDED

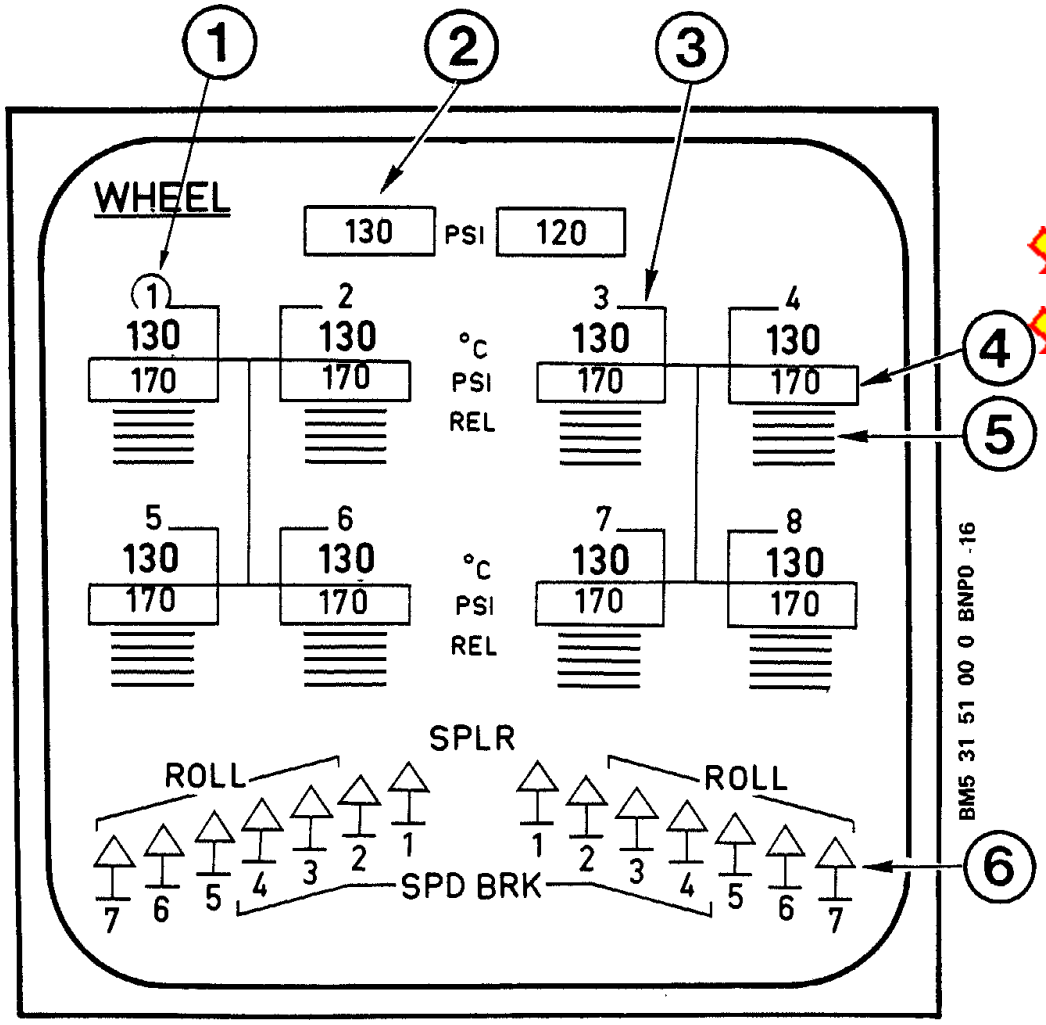
(A) : SPOILER EXTENDED AND FAULT

(G) : SPOILER RETRACTED

(A) : SPOILER RETRACTED AND FAULT

(G) : FLASHES WHEN SPOILER EXTENDED ON GROUND AND SPEED ≥ 70 KT

Some A310s WHEEL Page - GE CF6-80A3



1 - (1) INDICATES WHEEL WITH THE HOTTEST TEMPERATURE
IF TEMP ABOVE 100°C

2 - NOSE L/G WHEEL TIRE PRESSURE (G)
(A) WHEN LOW PRESS

3 - BRAKES TEMPERATURE (G)
(A) WHEN TEMPERATURE ≥ 260°C

4 - MAIN L/G WHEEL TIRE PRESSURE (G)
(A) WHEN LOW PRESS

5 - BRAKE RELEASE

(G) : BRAKE RELEASED
NOT DISPLAYED WHEN BRAKE NOT RELEASED

6 - SPOILER POSITION INDICATION

(G) : SPOILER EXTENDED

(A) : SPOILER EXTENDED AN FAULT

(G) : SPOILER RETRACTED

(A) : SPOILER RETRACTED AND FAULT

(G) : FLASHES WHEN SPOILER EXTENDED ON GROUND
AND SPEED ≥ 70 Kt

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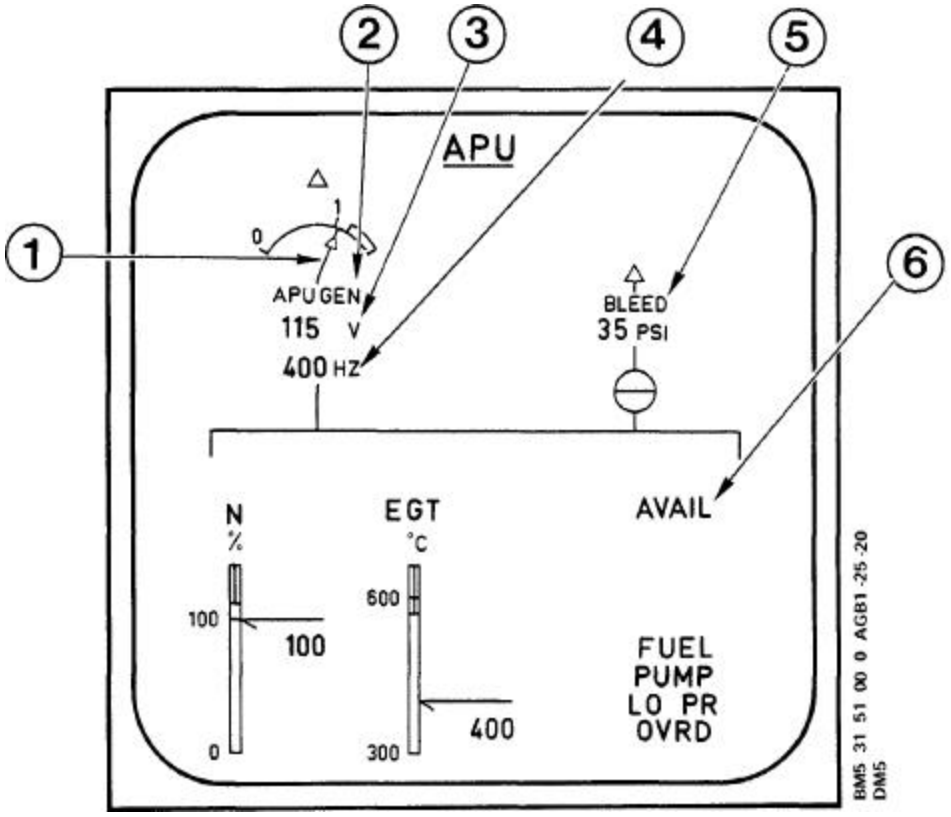
APU

PAGE

A300/A310 APU Page



1 - APU GENERATOR LOAD (G)

(A) WHEN LOAD ≥ 110%

△ (W) REPLACES LOAD INDICATION WHEN APU MASTER SW IS IN OFF POSITION

2 - APU GEN (W)

(A) WHEN APU GEN P/B SWITCH IS SELECTED OFF/R AND APU MASTER SW IS IN ON POSITION

3 - APU GENERATOR VOLTAGE (G)

(A) WHEN VOLTAGE < 110V
> 120V

OFF (W) REPLACES VOLTAGE INDICATION WHEN APU GEN P/B SWITCH IS SELECTED OFF/R
NOT DISPLAYED WHEN APU MASTER SW IS IN OFF POSITION

4 - APU GENERATOR FREQUENCY (G)

(A) WHEN FREQUENCY < 390 HZ
> 416 HZ

NOT DISPLAYED WHEN APU MASTER SW IS IN OFF POSITION OR APU GEN P/B SWITCH IS SELECTED OFF/R

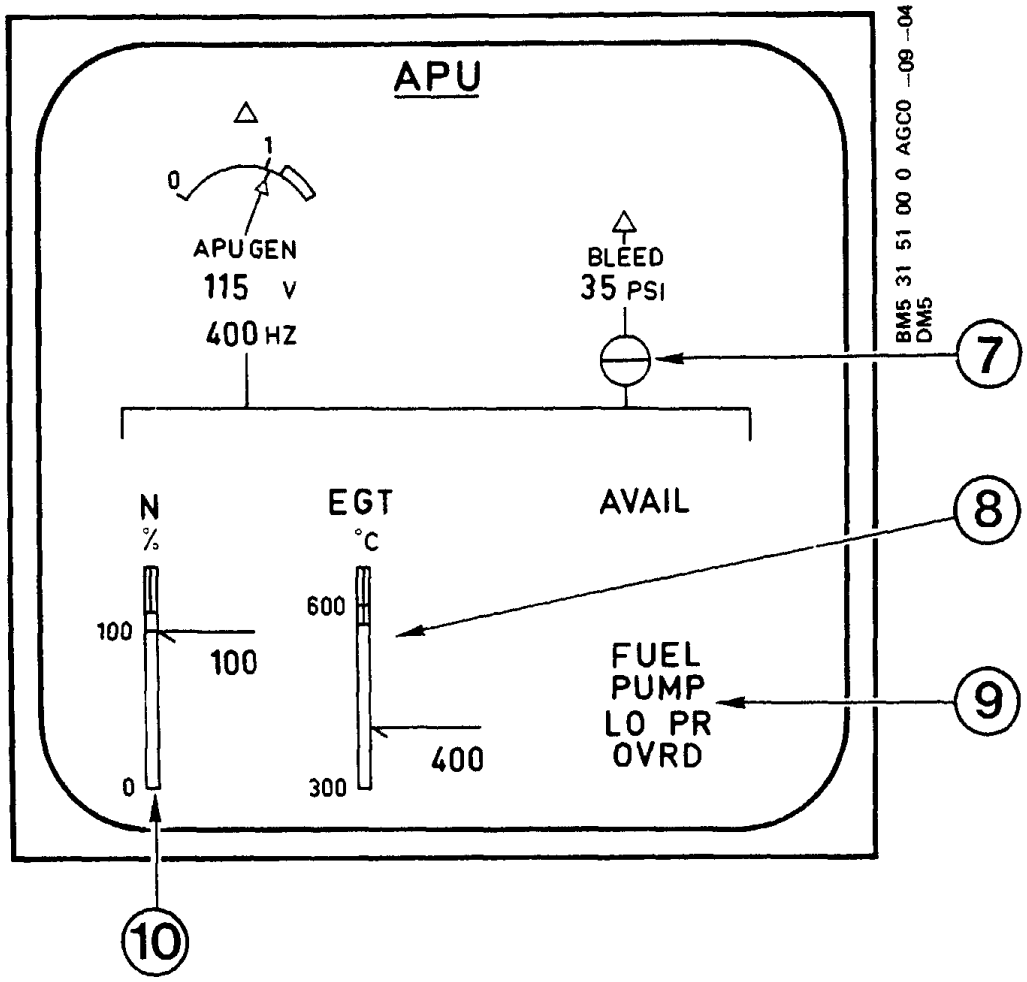
5 - APU BLEED PRESSURE (G)

(A) WHEN PRESSURE > 57 PSI

NOT DISPLAYED WHEN BLEED VALVE CLOSED
XX(A) IF POWER SUPPLY LOSS FOR CONTROLLER INDICATOR - A300 and Some A310s

6 - AVAIL (NOT DISPLAYED)
AVAIL (C) WHEN > 95% AND APU MASTER SW IS IN ON POSITION

A300/A310 APU Page



7 - APU BLEED VALVE

(G) . VALVE FULLY OPEN

(G) VALVE CLOSED (NOT FULLY OPEN)

8 - APU EXHAUST GAS TEMPERATURE (G)
FLASHES WHEN EGT ⩾ 540°C.
(A) WHEN EGT ⩾ 585°C

9 - FUEL PUMP (W) WHEN LO PRESS OR OVRD
LO PR (A) WHEN FUEL LO PRESS
OVRD (G) WHEN FUEL PUMP SW IS SELECTED IN OVERRIDE POSITION
NOT DISPLAYED IN NORMAL OPERATION

10 - APU RPM (G)
(A) WHEN N ⩾ 107 %

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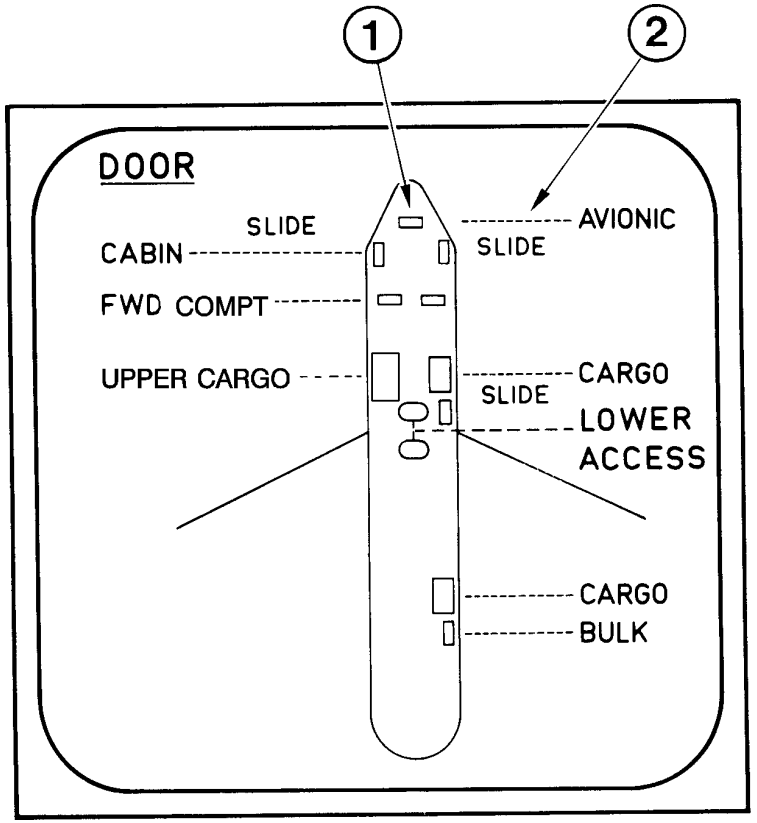
RH ECAM

DOOR

PAGE

A300/A310 DOOR Page - System Display



1 · (G) ▭ (W) ---------- AVIONIC (W) : DOOR LOCKED

(A) ▥ (A) ---------- AVIONIC (A) : DOOR NOT LOCKED

2 · SLIDE (W) : WHEN CABIN SLIDE ARM
NOTHING DISPLAYED WHEN CABIN SLIDE DISARM.

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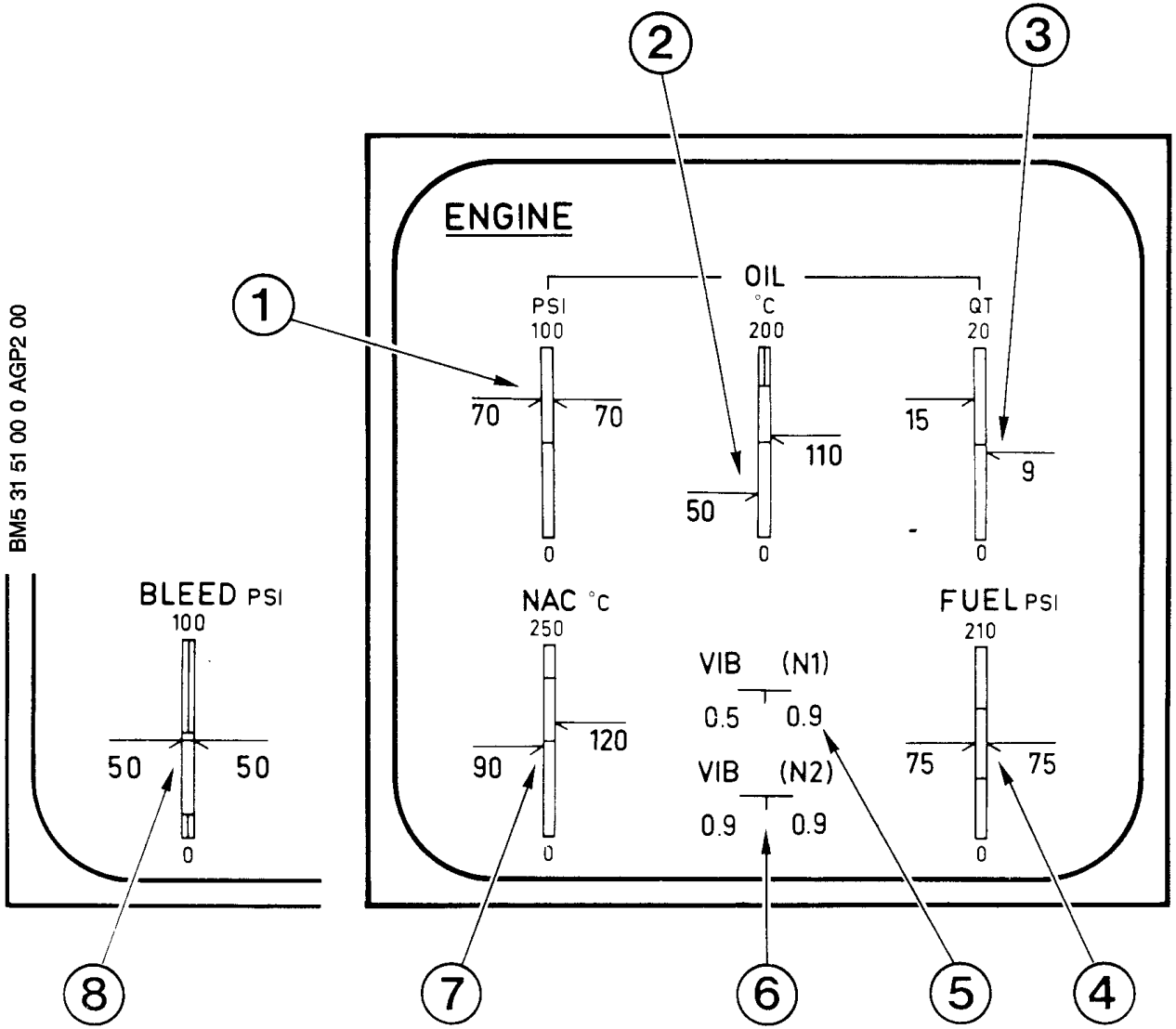
ENGINE

PAGE



1 · OIL PRESSURE (G)
FLASHES WHEN P ⩾ 90 PSI OR P ⩽ 16 PSI
(R) WHEN P ⩽ 10 PSI
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

2 · OIL TEMPERATURE (G)
FLASHES WHEN t ⩾ 160°C
(A) WHEN t ⩾ 175°C

3 · OIL QUANTITY (G)
FLASHES WHEN QUANTITY ⩽ 2 QTS

XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

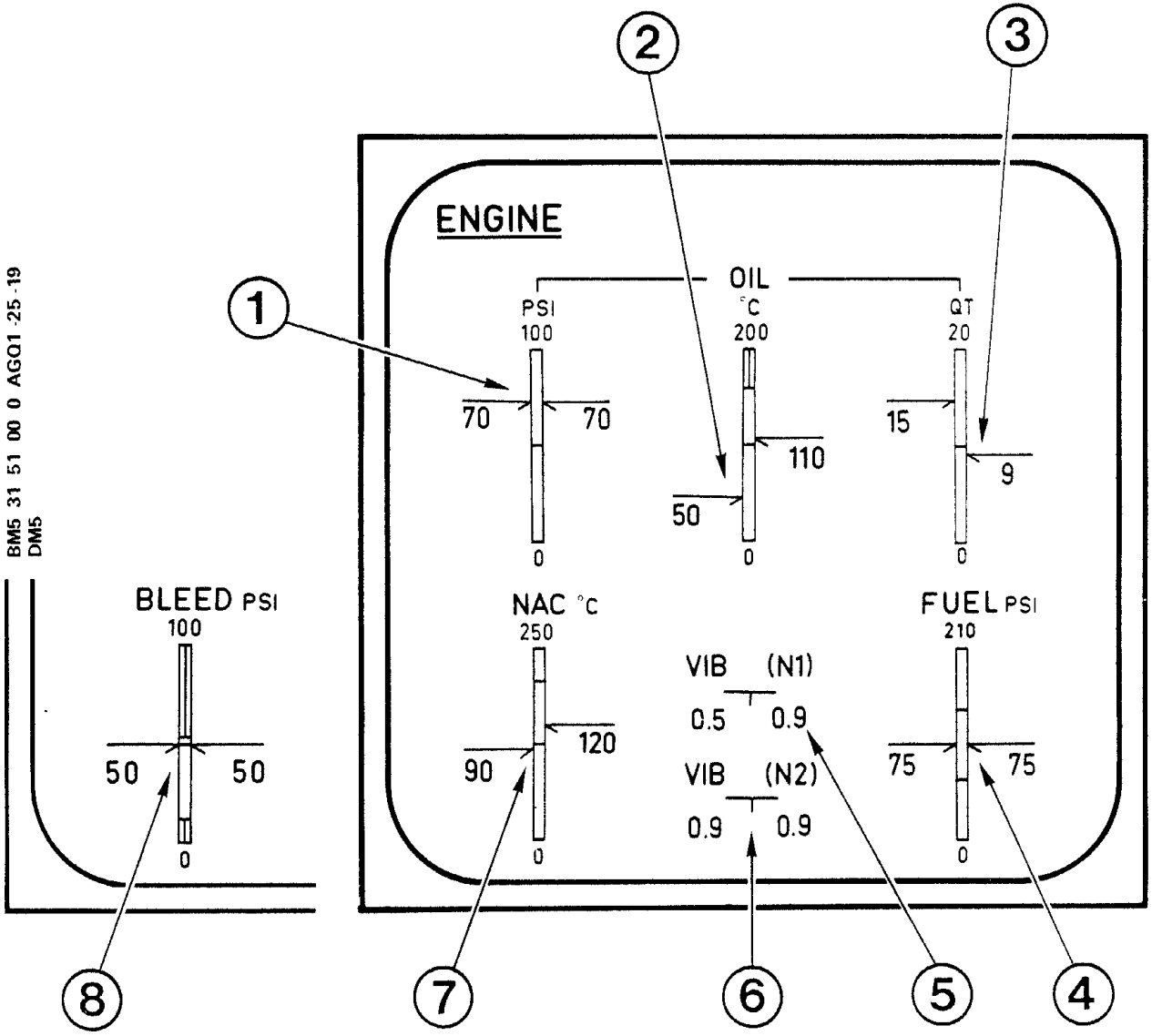
4 · FUEL PRESSURE (G)
FLASHES WHEN PRESSURE ⩽ 50 PSI
(ONLY WITH BOTH ENG)

5 · ENGINE VIBRATION (N1) (G)
FLASHES WHEN VIBRATION ⩾ 3 UNITS

6 · ENGINE VIBRATION (N2) (G)
FLASHES WHEN VIBRATION ⩾ 5 UNITS

7 · NACELLE TEMPERATURE (G)
FLASHES WHEN t ⩾ 185°C + TAT
NOT DISPLAYED DURING STARTING SEQUENCE
(REPLACED BY BLEED PRESSURE INDICATION)

8 · BLEED PRESSURE (G)
(A) WHEN PRESSURE ⩽ 8 PSI
⩾ 57 PSI
DISPLAYED DURING STARTING SEQUENCE
* IF TAT (ADC BUS) NOT AVAILABLE
THIS ADVISORY WILL BE SUPPRESSED
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR



1 - OIL PRESSURE (G)
FLASHES WHEN P ≥ 90 PSI OR P ≤ 16 PSI
(R) WHEN P ≤ 10 PSI
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

2 - OIL TEMPERATURE (G)
FLASHES WHEN t ≥ 160°C
(A) WHEN t ≥ 175°C

3 - OIL QUANTITY (G)
FLASHES WHEN QUANTITY ≤ 2 QTS
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

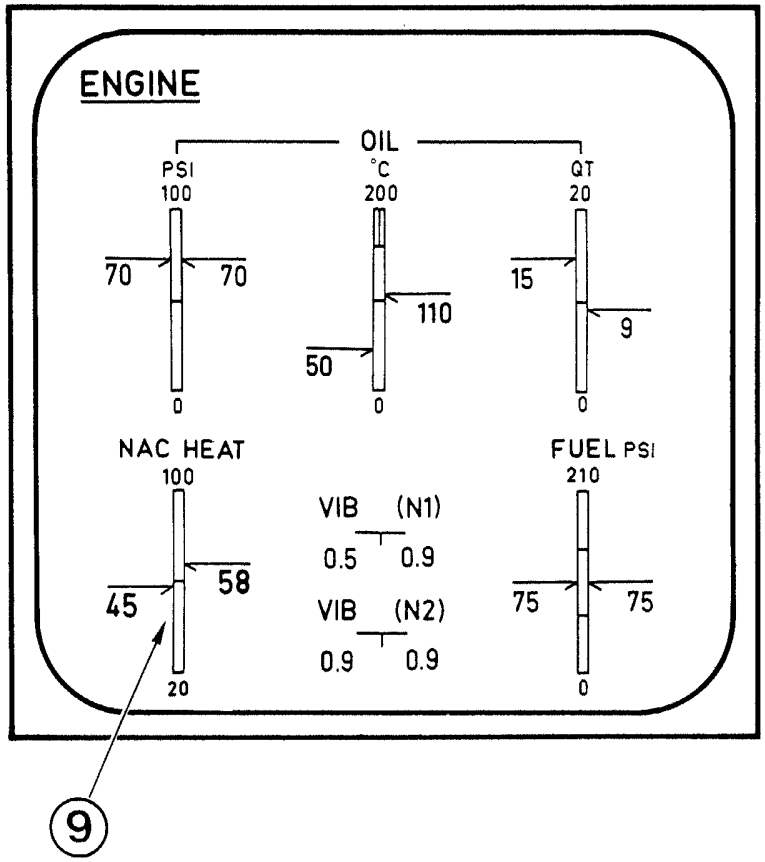
4 - FUEL PRESSURE (G)
FLASHES WHEN PRESSURE ≤ 50 PSI
(ONLY WITH BOTH ENG)

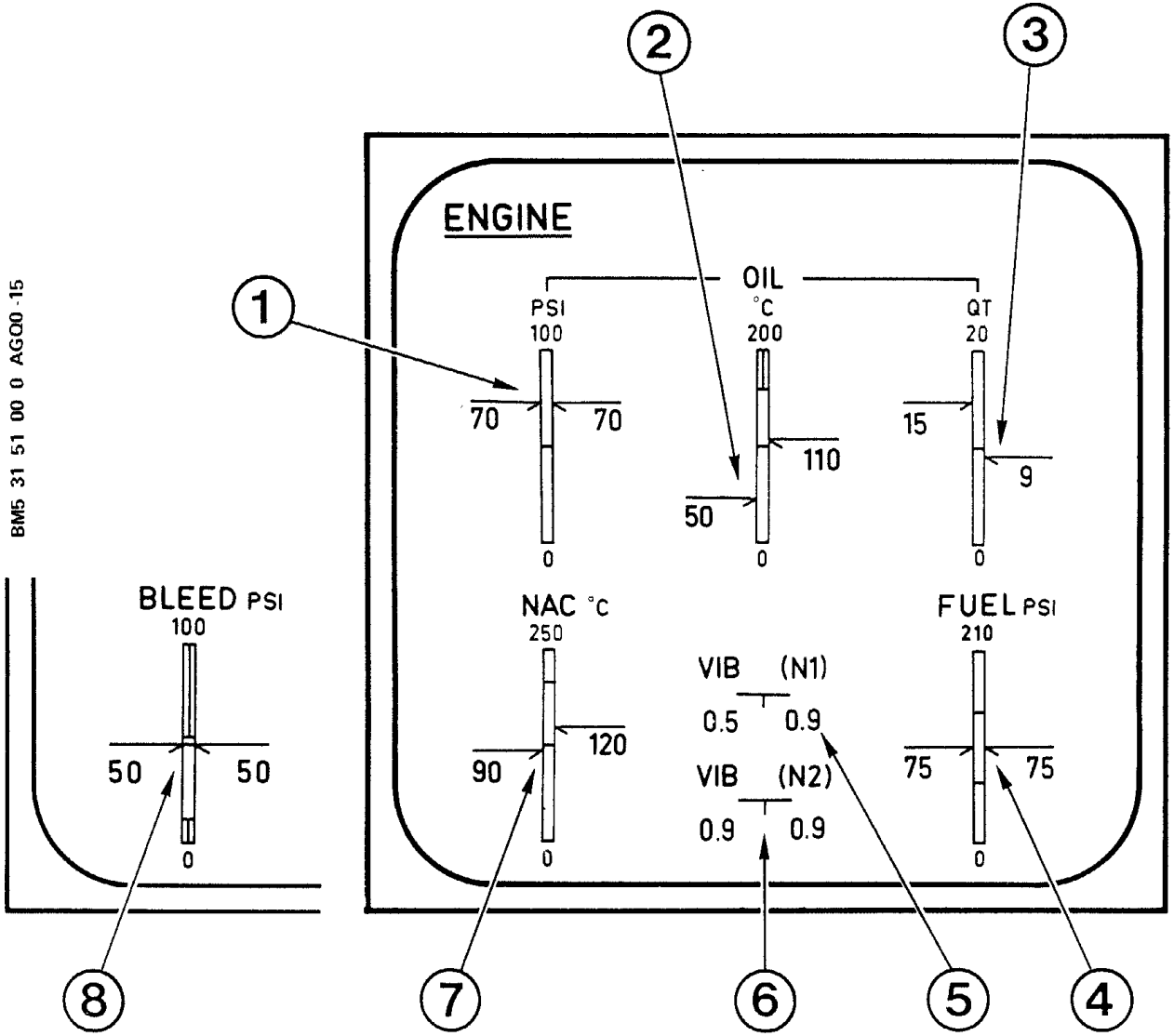
5 - ENGINE VIBRATION (N1) (G)
FLASHES WHEN VIBRATION ≥ 3 UNITS

6 - ENGINE VIBRATION (N2) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

7 - NACELLE TEMPERATURE (G)
FLASHES WHEN t ≥ 185°C + TAT
NOT DISPLAYED DURING STARTING SEQUENCE
(REPLACED BY BLEED PRESSURE INDICATION)

8 - BLEED PRESSURE (G)
(A) WHEN PRESSURE ≤ 8 PSI
≥ 57 PSI
DISPLAYED DURING STARTING SEQUENCE
* IF TAT (ADC BUS) NOT AVAILABLE
THIS ADVISORY WILL BE SUPPRESSED
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR


ENGINE
OIL
PSI
100
70
70
0
°C
200
110
50
0
QT
20
15
9
0
NAC HEAT
100
45
58
20
VIB (N1)
0.5
0.9
VIB (N2)
0.9
0.9
FUEL PSI
210
75
75
0
NAC HEAT (G)
FLASHES IF ≥ 55 %
(A) WHEN HEAT ≥ 90 %
9



1 - OIL PRESSURE (G)
FLASHES WHEN P ≥ 90 PSI OR P ≤ 16 PSI
(R) WHEN P ≤ 10 PSI

2 - OIL TEMPERATURE (G)
FLASHES WHEN t ≥ 160°C
(A) WHEN t ≥ 175°C.

3 - OIL QUANTITY (G)
FLASHES WHEN QUANTITY ≤ 2 QTS

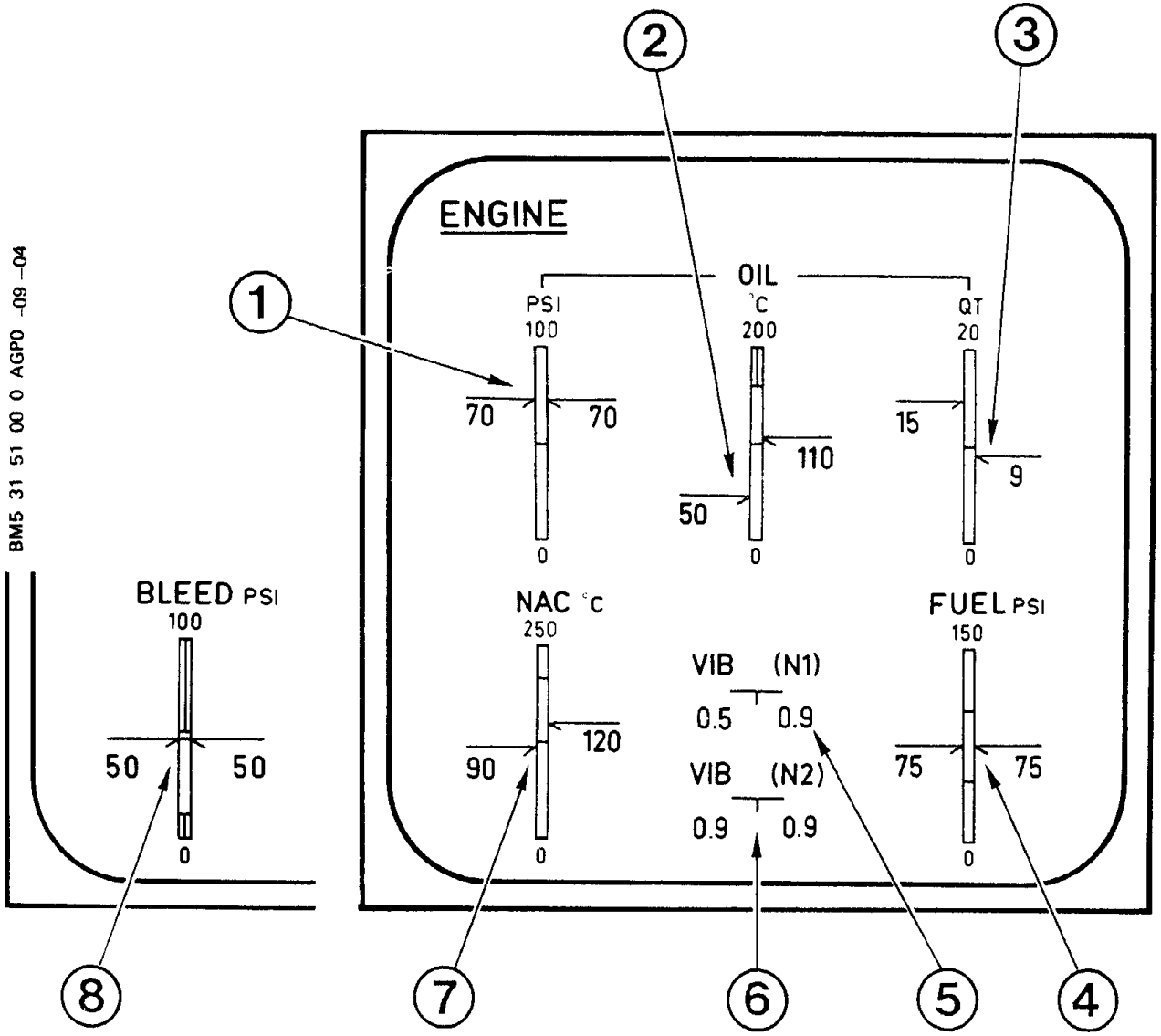
4 - FUEL PRESSURE (G)
FLASHES WHEN PRESSURE ≤ 50 PSI
(ONLY WITH BOTH ENG)

5 - ENGINE VIBRATION (N1) (G)
FLASHES WHEN VIBRATION ≥ 3 UNITS

6 - ENGINE VIBRATION (N2) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

7 - NACELLE TEMPERATURE (G)
FLASHES WHEN t ≥ 185°C + TAT
NOT DISPLAYED DURING STARTING SEQUENCE
(REPLACED BY BLEED PRESSURE INDICATION)

8 - BLEED PRESSURE (G)
(A) WHEN PRESSURE ≤ 8 PSI
≥ 57 PSI
DISPLAYED DURING STARTING SEQUENCE
* IF TAT (ADC BUS) NOT AVAILABLE
THIS ADVISORY WILL BE SUPPRESSED



BM5 31 51 00 0 AGP0 -09 -04

1 OIL PRESSURE (G)
FLASHES WHEN P ≥ 90 PSI or P ≤ 16 PSI
'R) WHEN P ≤ 10 PSI

2 OIL TEMPERATURE (G)
FLASHES WHEN t ≥ 160°C
(A) WHEN t ≥ 175°C

3 OIL QUANTITY (G)
FLASHES WHEN QUANTITY ≤ 2 QTS

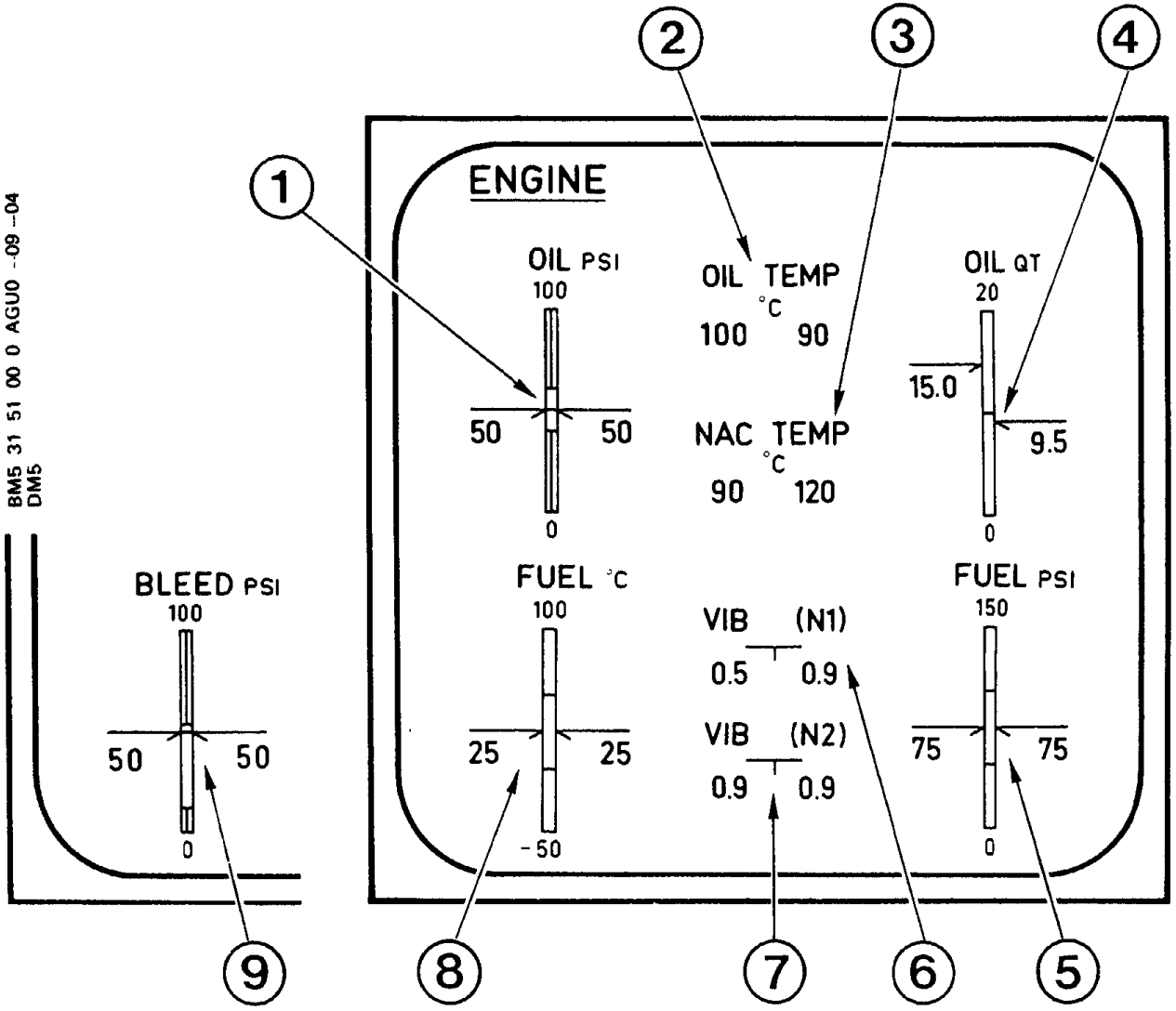
4 · FUEL PRESSURE (G)
FLASHES WHEN PRESSURE ≤ 50 PSI

5 · ENGINE VIBRATION (N1) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

6 · ENGINE VIBRATION (N2) (G)
FLASHES WHEN VIBRATION ≥ 7.5 UNITS

7* NACELLE TEMPERATURE (G)
FLASHES WHEN t > 185° C + TAT
NOT DISPLAYED DURING STARTING SEQUENCE
(REPLACED BY BLEED PRESSURE INDICATION)

8 · BLEED PRESSURE (G)
(A) WHEN PRESSURE ≤ 8 PSI
≥ 57 PSI
DISPLAYED DURING STARTING SEQUENCE
* IF TAT (ADC BUS) NOT AVAILABLE
THIS ADVISORY WILL BE SUPPRESSED



BM5 31 51 00 0 AGU0 -09 -04
DM5

1 OIL PRESSURE (G)
FLASHES WHEN P ≤ 40 PSI
(A) WHEN P ≥ 60 PSI
(R) WHEN P ≤ 35 PSI

2 OIL TEMPERATURE (G)
FLASHES WHEN t ≥ 140°C
(A) WHEN T ≥ 163° C

3 NACELLE TEMPERATURE (G)
FLASHES WHEN t ≥ 200°C

4 OIL QUANTITY (G)
FLASHES WHEN QUANTITY ≤ 4 QTS

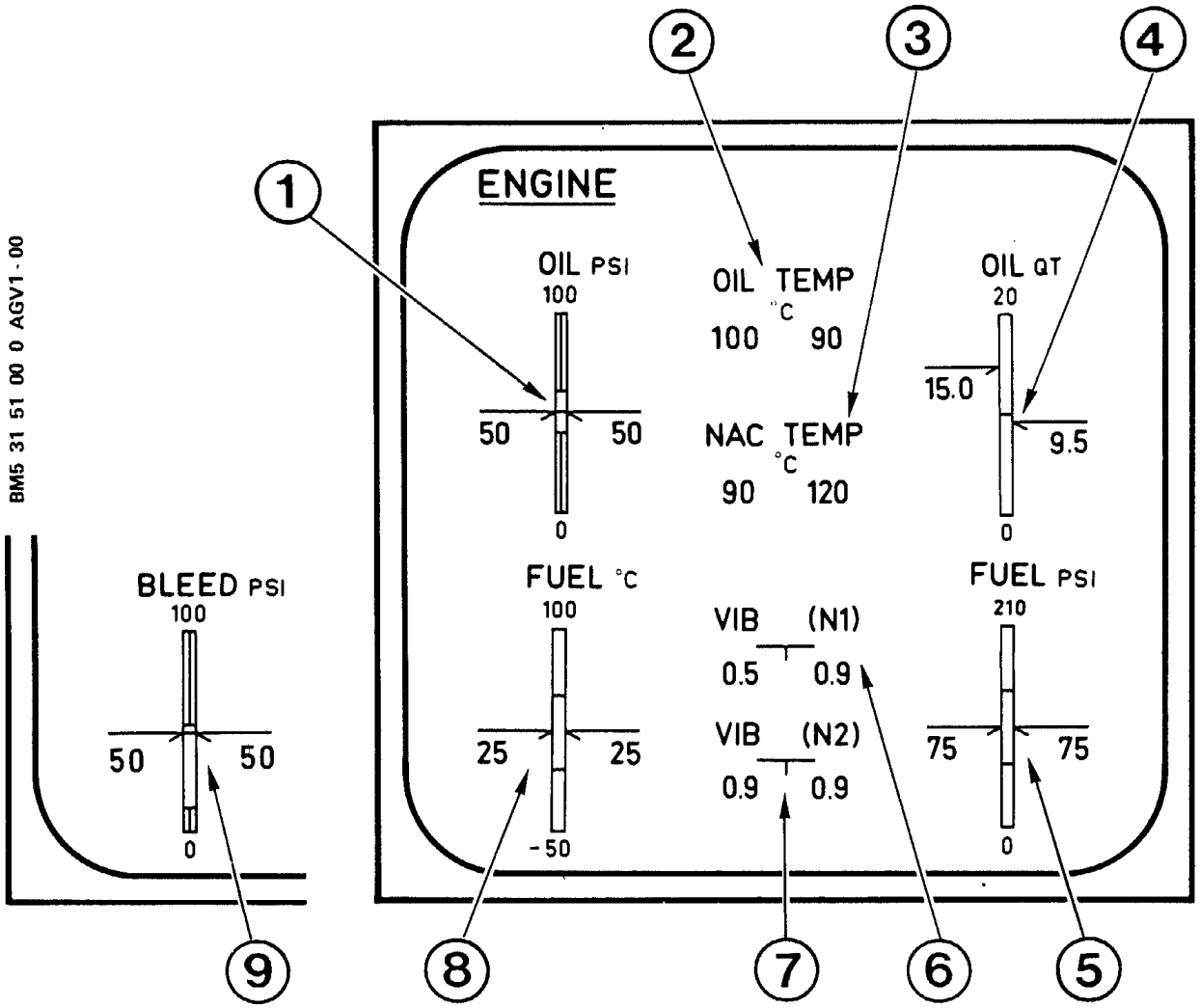
5 FUEL PRESSURE (G)

6 · ENGINE VIBRATION (N1) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

7 · ENGINE VIBRATION (N2) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

8 · FUEL TEMPERATURE (G)
FLASHES WHEN t ≤ -2° C
NOT DISPLAYED DURING STARTING SEQUENCE
(REPLACED BY BLEED PRESSURE INDICATION)

9 · BLEED PRESSURE (G)
(A) WHEN PRESSURE ≤ 8 PSI
≥ 57 PSI
DISPLAYED DURING STARTING SEQUENCE



1 - OIL PRESSURE (G)
FLASHES WHEN P ≤ 38 PSI
(A) WHEN P ≥ 60 PSI
(B) WHEN P ≤ 35 PSI
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

2 - OIL TEMPERATURE (G)
FLASHES WHEN t ≥ 140°C
(A) WHEN T ≥ 163°C

3 - NACELLE TEMPERATURE (G)
FLASHES WHEN t ≥ 200°C

4 - OIL QUANTITY (G)
FLASHES WHEN QUANTITY ≤ 4 QTS
XX (A) IF POXER SUPPLY LOSS
FOR CONTROLLER INDICATOR

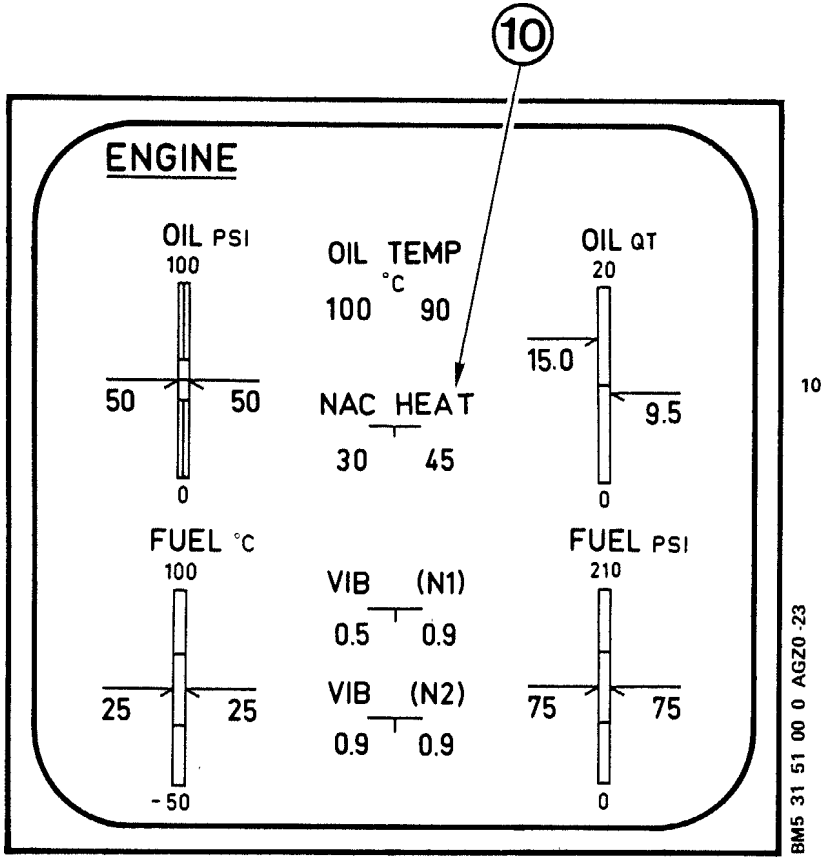
5 - FUEL PRESSURE (G)

6 - ENGINE VIBRATION (N1) (G)
FLASHES WHEN VIBRATION ≥ 3 UNITS

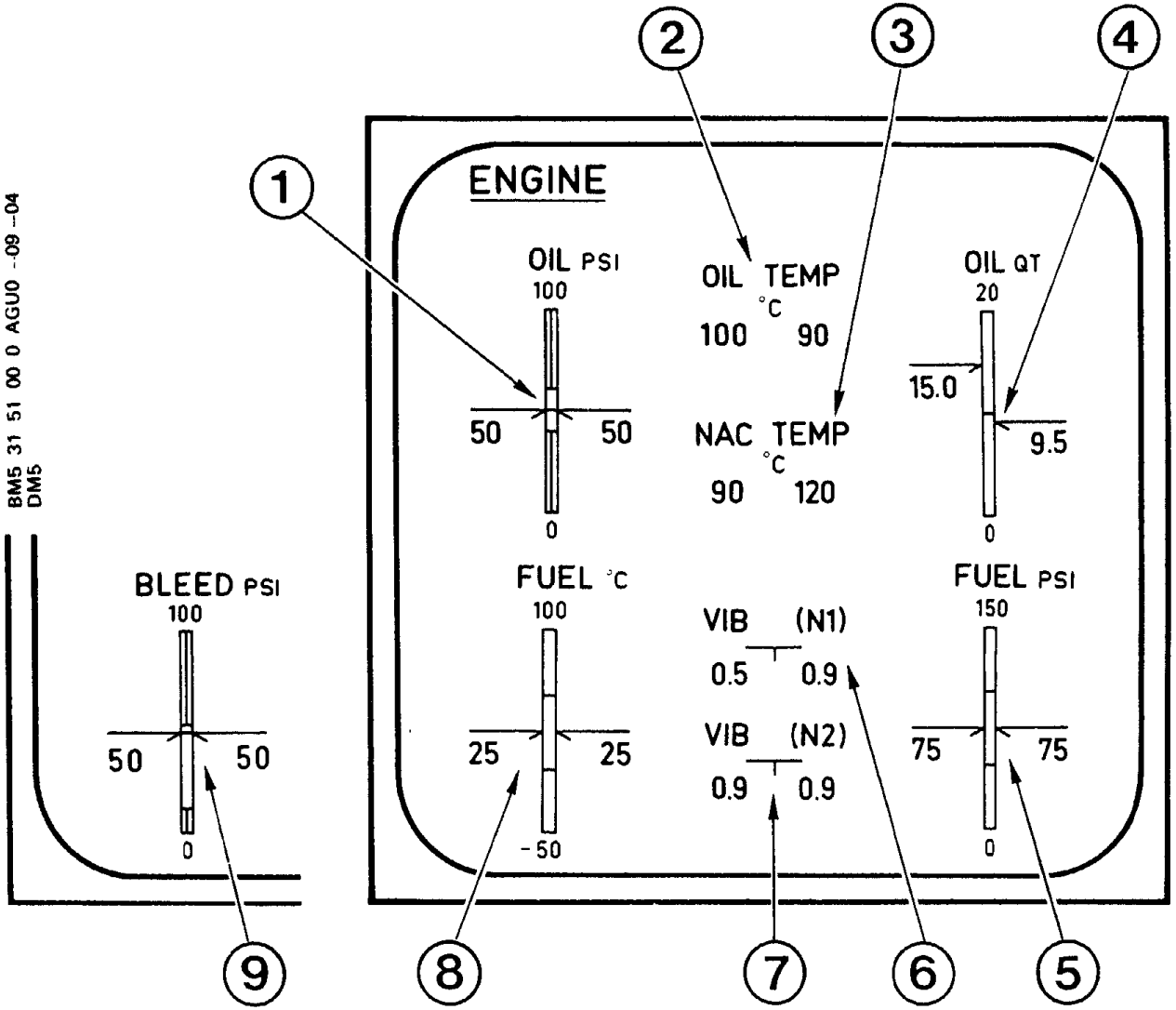
7 - ENGINE VIBRATION (N2) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

8 - FUEL TEMPERATURE (G)
FLASHES WHEN t ≤ -2°C
NOT DISPLAYED DURING STARTING SEQUENCE
(REPLACED BY BLEED PRESSURE INDICATION)

9 - BLEED PRESSURE (G)
(A) WHEN PRESSURE ≤ 8 PSI
≥ 57 PSI
DISPLAYED DURING STARTING SEQUENCE
XX (A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR



10 - NAC HEAT (G)
FLASHES IF ≥ 70%
(A) WHEN HEAT ≥ 90%



1 OIL PRESSURE (G)
FLASHES WHEN P ≤ 40 PSI
(A) WHEN P ≥ 60 PSI
(R) WHEN P ≤ 35 PSI

2 OIL TEMPERATURE (G)
FLASHES WHEN t ≥ 140°C
(A) WHEN T ≥ 163° C

3 NACELLE TEMPERATURE (G)
FLASHES WHEN t ≥ 200°C

4 OIL QUANTITY (G)
FLASHES WHEN QUANTITY ≤ 4 QTS

5 FUEL PRESSURE (G)

6 · ENGINE VIBRATION (N1) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

7 · ENGINE VIBRATION (N2) (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

8 · FUEL TEMPERATURE (G)
FLASHES WHEN t ≤ -2° C
NOT DISPLAYED DURING STARTING SEQUENCE
(REPLACED BY BLEED PRESSURE INDICATION)

9 · BLEED PRESSURE (G)
(A) WHEN PRESSURE ≤ 8 PSI
≥ 57 PSI
DISPLAYED DURING STARTING SEQUENCE

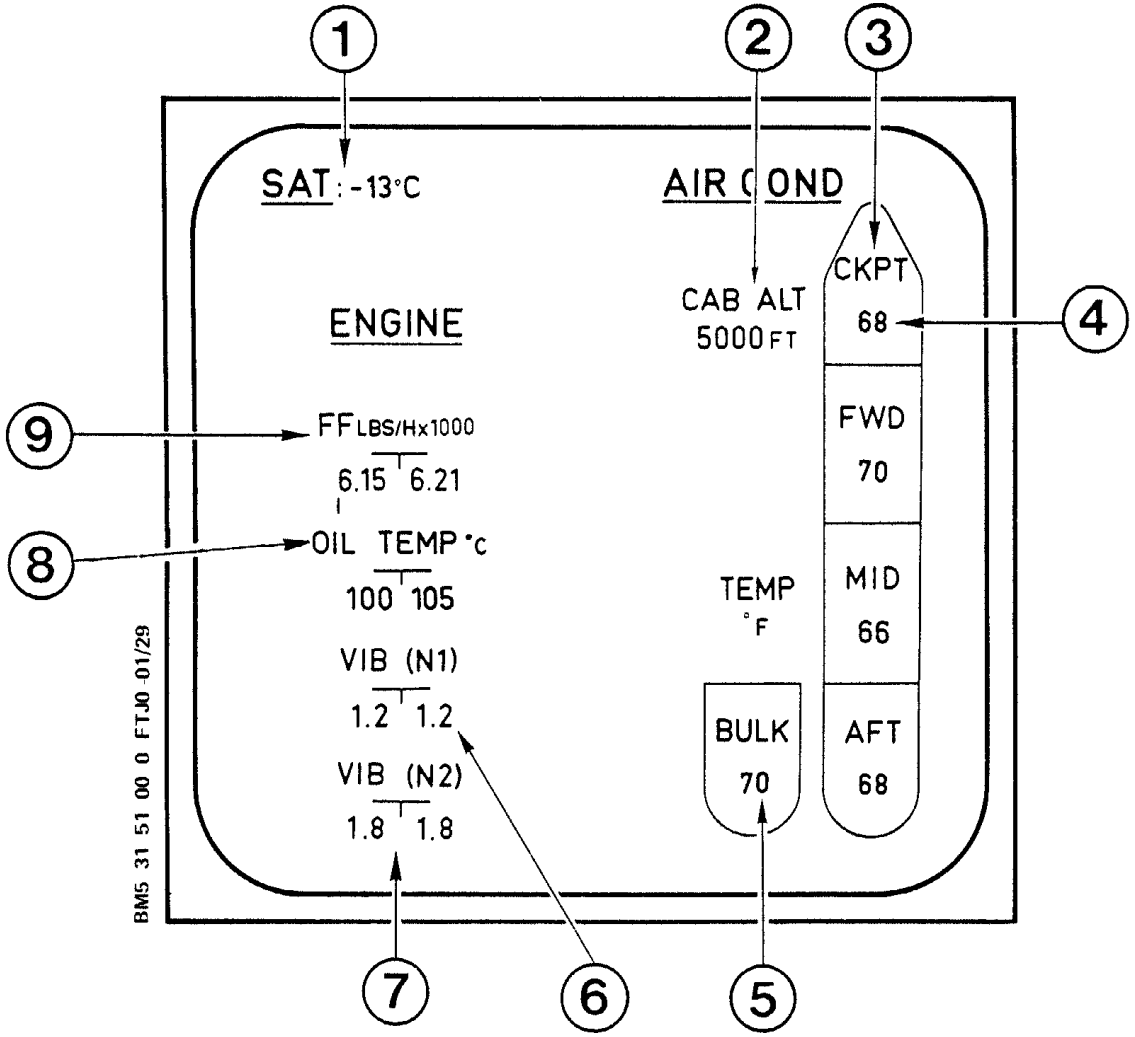
RH ECAM

CRUISE

PAGE

INFLIGHT OR ON JACKS

A300 CRUISE Page - GE CF6-80C2A5f



1 - STATIC AIR TEMPERATURE (G)

2 - CABIN ALTITUDE (G)
(R) WHEN ALTITUDE ≥ 10000 Ft

3 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° ≥ 190°F

4 - COMPARTMENT TEMPERATURE (G)

5 - CARGO COMPARTMENT TEMPERATURE (G)

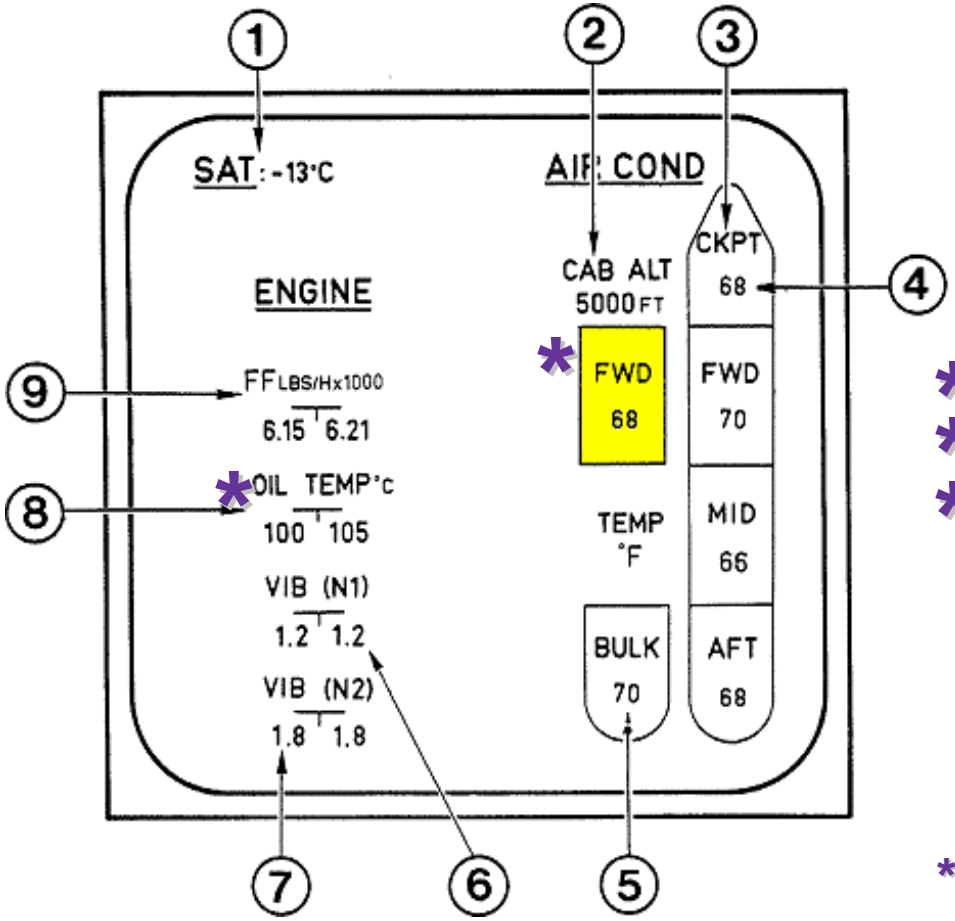
6 - ENGINE VIBRATION N1 (G)
FLASHES WHEN VIBRATION ≥ 3 UNITS

7 - ENGINE VIBRATION N2 (G)
FLASHES WHEN VIBRATION ≥ 5 UNITS

8 - OIL TEMPERATURE (G)
FLASHES WHEN t° ≥ 163°C
(A) WHEN t° ≥ 177°C

9 - FUEL FLOW (G)

A310 CRUISE Page - GE CF6-80A3



Some A310s

1 - STATIC AIR TEMPERATURE (G)

2 - CABIN ALTITUDE (G)
(R) WHEN ALTITUDE > 10000 Ft

3 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° > 88°C

4 - COMPARTMENT TEMPERATURE (G)

5 - CARGO COMPARTMENT TEMPERATURE (G)
FLASHES WHEN t° > 33°C

* 6 - ENGINE VIBRATION N1 (G)
FLASHES WHEN VIBRATION > 5 UNITS

* 7 - ENGINE VIBRATION N2 (G)
FLASHES WHEN VIBRATION > 7.5 UNITS

* 8 - OIL TEMPERATURE (G)
FLASHES WHEN t° > 160°C
(A) WHEN t° > 175°C

9 - FUEL FLOW (G)
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

Other A310s

1 - STATIC AIR TEMPERATURE (G)

2 - CABIN ALTITUDE (G)
(R) WHEN ALTITUDE > 10000 Ft

3 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° > 88°C

4 - COMPARTMENT TEMPERATURE (G)

5 - CARGO COMPARTMENT TEMPERATURE (G)
FLASHES WHEN t° > 42°C OR < 13°C

6 - ENGINE VIBRATION N1 (G)
FLASHES WHEN VIBRATION > 5 UNITS

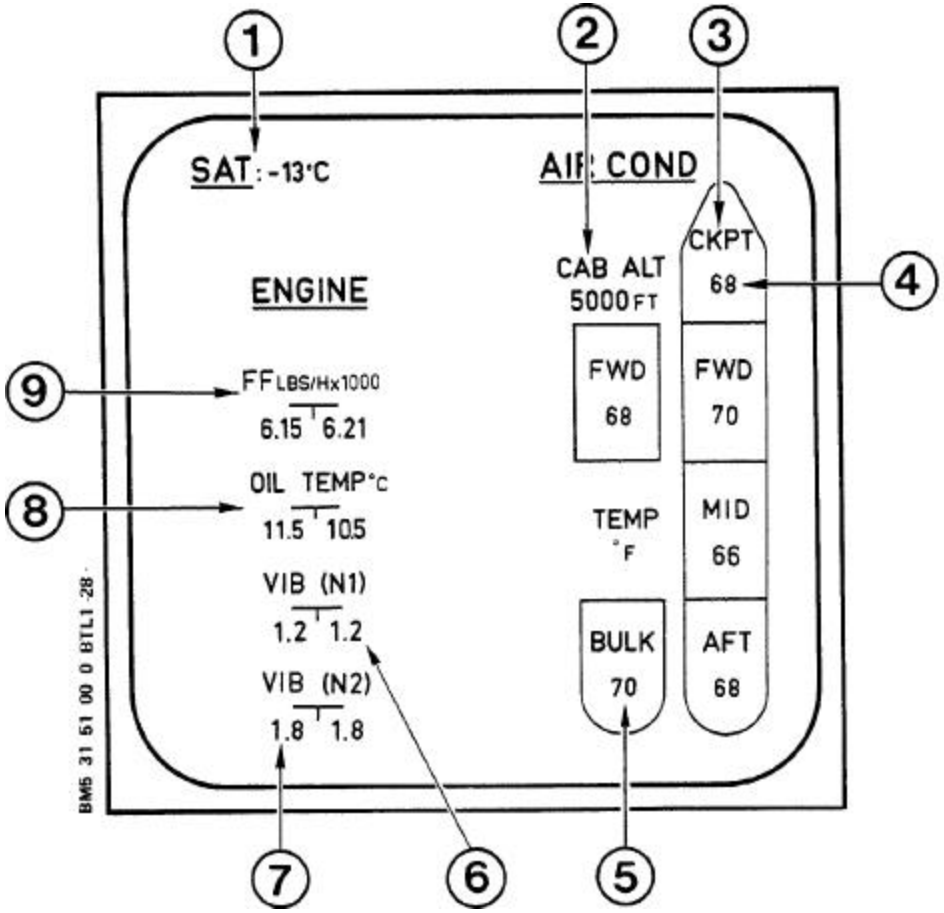
7 - ENGINE VIBRATION N2 (G)
FLASHES WHEN VIBRATION > 7.5 UNITS

8 - OIL TEMPERATURE (G)
FLASHES WHEN t° > 160°C
(A) WHEN t° > 175°C

9 - FUEL FLOW (G)

*Other Differences with Some A310s

A310 CRUISE Page - GE CF6-80A3



Some A310s

1 - STATIC AIR TEMPERATURE (G)

2 - CABIN ALTITUDE (G)
(R) WHEN ALTITUDE > 10000 Ft

3 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° > 88°C

4 - COMPARTMENT TEMPERATURE (G)

5 - CARGO COMPARTMENT TEMPERATURE (G)
FLASHES WHEN t° > 42°C OR < 13°C

6 - ENGINE VIBRATION N1 (G)
FLASHES WHEN VIBRATION > 5 UNITS

7 - ENGINE VIBRATION N2 (G)
FLASHES WHEN VIBRATION > 7.5 UNITS

8 - OIL TEMPERATURE (G)
FLASHES WHEN t° > 160°C
(A) WHEN t° > 175°C

9 - FUEL FLOW (G)

Other A310s

1 - STATIC AIR TEMPERATURE (G)

2 - CABIN ALTITUDE (G)
(R) WHEN ALTITUDE > 10000 Ft

3 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° > 88°C

4 - COMPARTMENT TEMPERATURE (G)

5 - CARGO COMPARTMENT TEMPERATURE (G)
FLASHES WHEN t° > 33°C

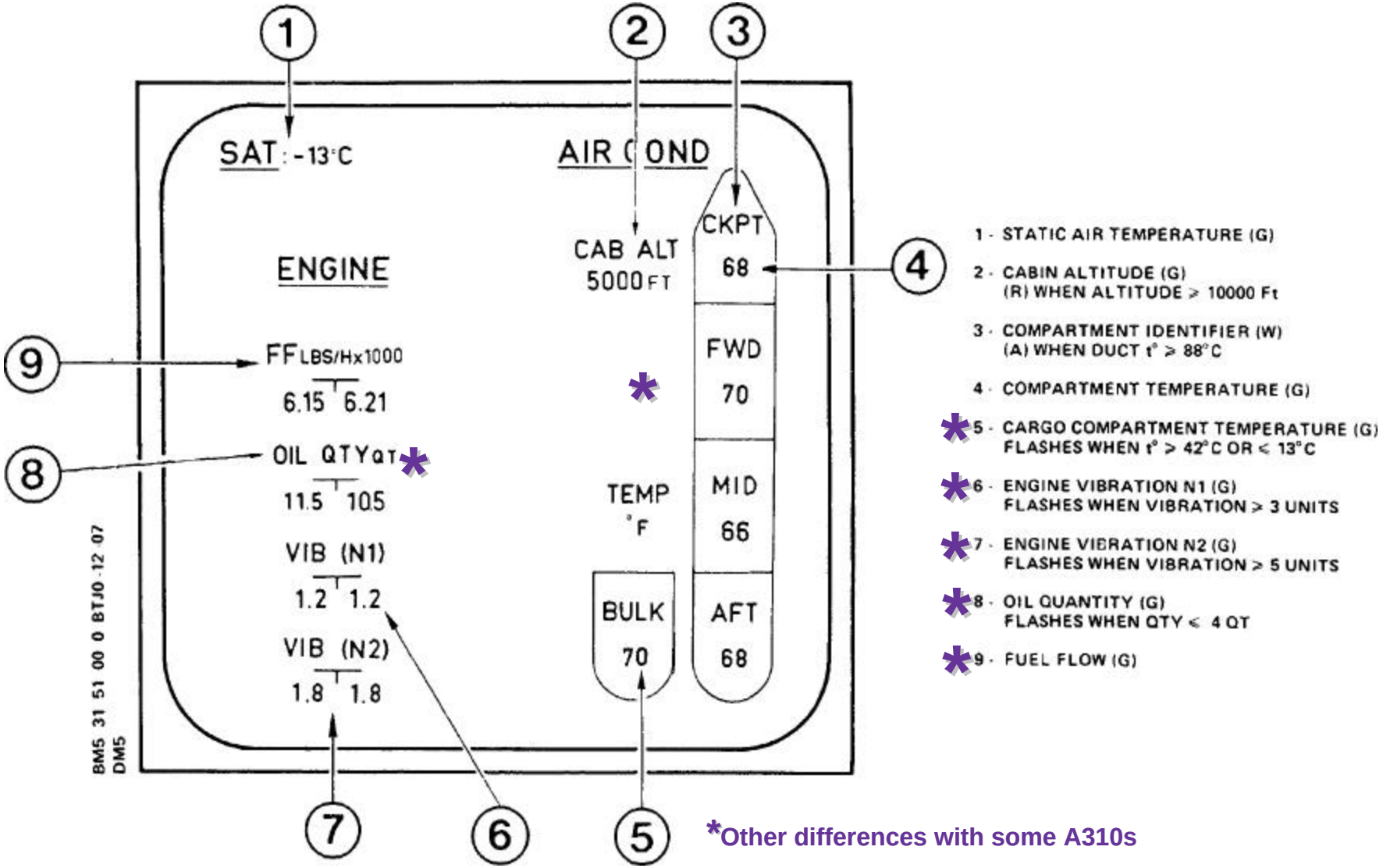
6 - ENGINE VIBRATION N1 (G)
FLASHES WHEN VIBRATION > 5 UNITS

7 - ENGINE VIBRATION N2 (G)
FLASHES WHEN VIBRATION > 7.5 UNITS

8 - OIL TEMPERATURE (G)
FLASHES WHEN t° > 160°C
(A) WHEN t° > 175°C

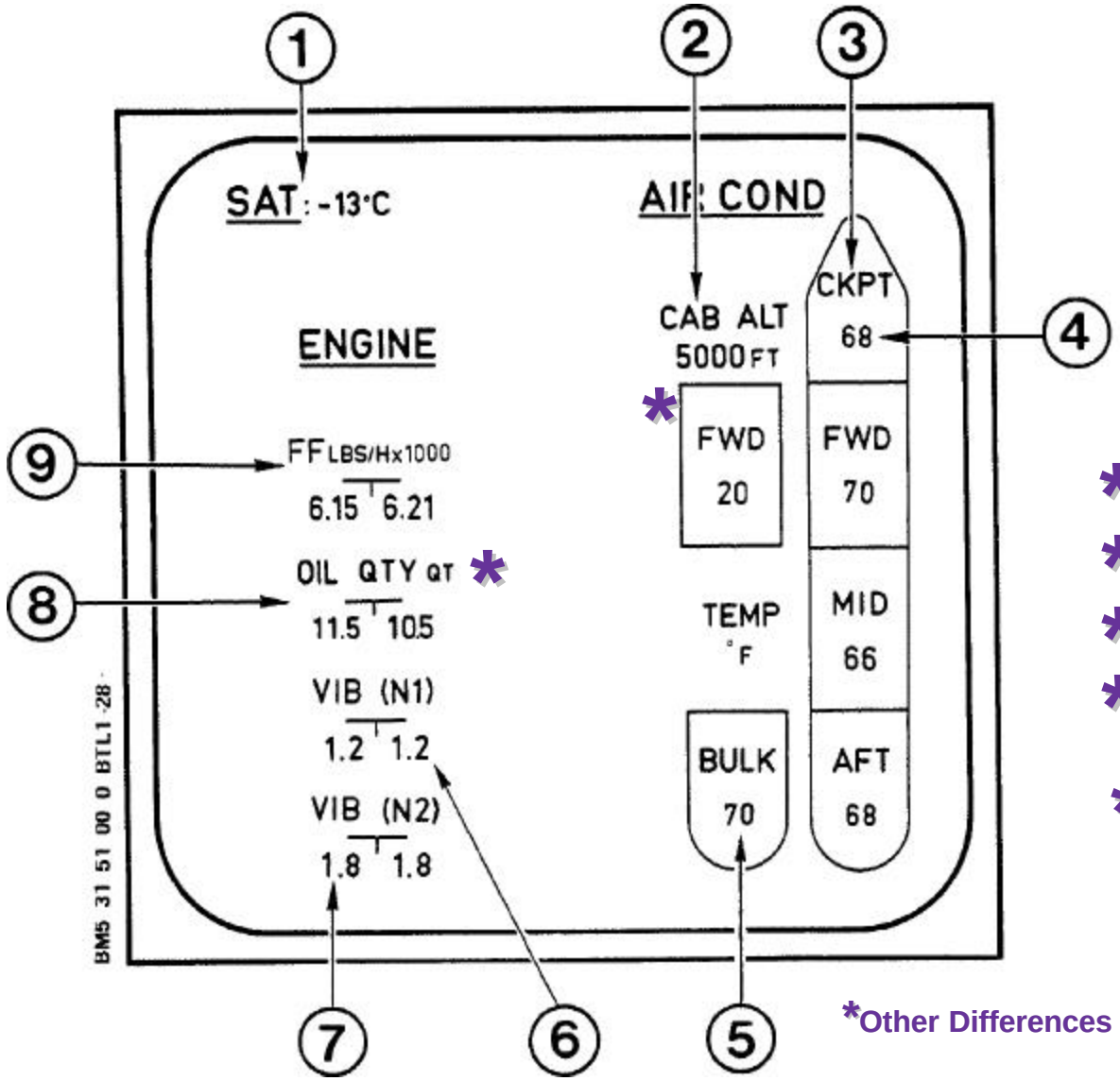
9 - FUEL FLOW (G)
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

A310 CRUISE Page - PW JT9D-7R4



*Other differences with some A310s

A310 CRUISE Page - PW JT9D-7R4



1 - STATIC AIR TEMPERATURE (G)

2 - CABIN ALTITUDE (G)
(R) WHEN ALTITUDE > 10000 Ft

3 - COMPARTMENT IDENTIFIER (W)
(A) WHEN DUCT t° > 88°C

4 - COMPARTMENT TEMPERATURE (G)

* 5 - CARGO COMPARTMENT TEMPERATURE (G)
FLASHES WHEN t° > 33°C

* 6 - ENGINE VIBRATION N1 (G)
FLASHES WHEN VIBRATION > 5 UNITS

* 7 - ENGINE VIBRATION N2 (G)
FLASHES WHEN VIBRATION > 5 UNITS

* 8 - OIL QUANTITY (G)
FLASHES WHEN QTY < 4 QT

* 9 - FUEL FLOW (G)
XX(A) IF POWER SUPPLY LOSS
FOR CONTROLLER INDICATOR

*Other Differences with Some A310s

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A300/A310 - Normal Mode Operation

Four modes of operation are provided: three modes are automatic, one manual.

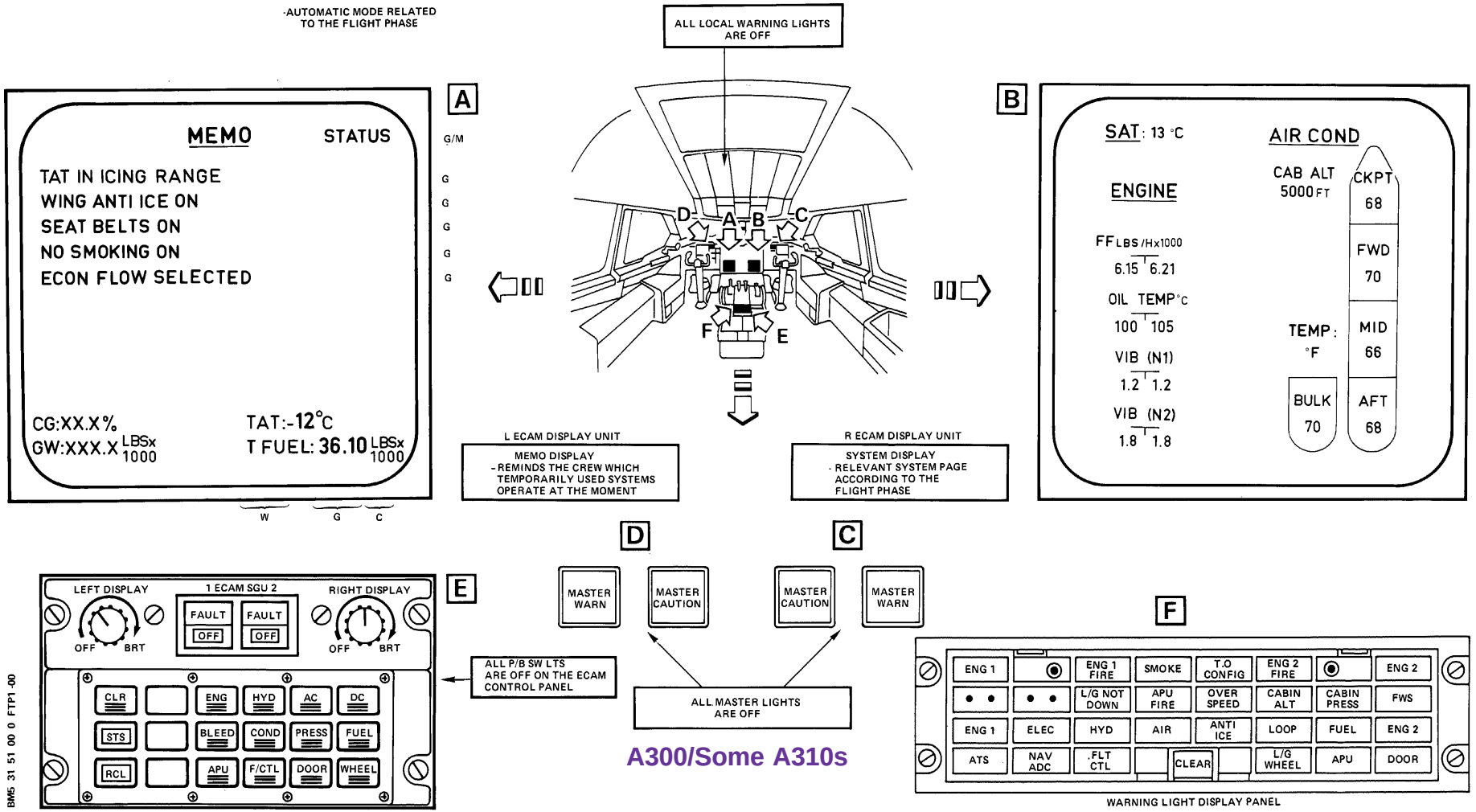
1. Normal Mode
2. Advisory Mode
3. Failure Mode
4. Manual Mode

NORMAL MODE

This mode is possible only when the other modes are not engaged.

- The LH ECAM shows the MEMO Page.
- The RH ECAM automatically shows the most appropriate system page to the current flight phase.

Normal Operation Mode



ECAM Advisory and Failure Mode

ADVISORY MODE

When a parameter drifts out of normal range:

- The R CRT shows the relevant system page to attract crew attention well before reaching the warning level. The word ADV is flashing in White just after the title. The parameter which triggers the advisory mode will pulse smoothly.

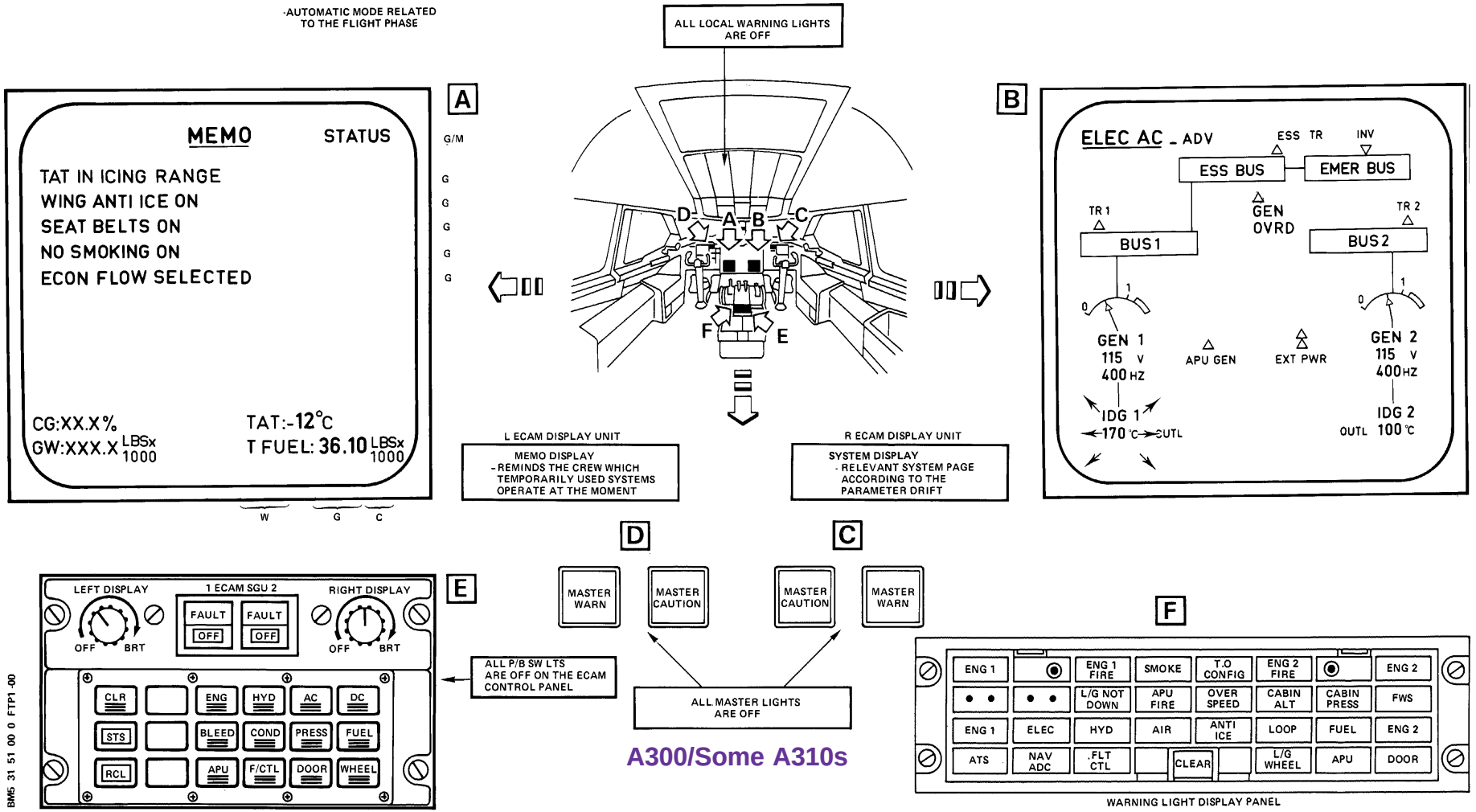
FAILURE MODE

As soon as a warning is detected by the FWC:

- the L CRT shows the associated message.
- the R CRT shows the warning associated page (if any). This mode allows the crew to crosscheck, on the, system display, the affected part of the system and to follow the result of its corrective action.

This mode has priority over all the others but can be superseded on the R CRT by a manual call of a system page. It is disengaged by suppression of the associated warning messages (CLR or failure disappearance).

ECAM Advisory Mode



ECAM Manual Mode

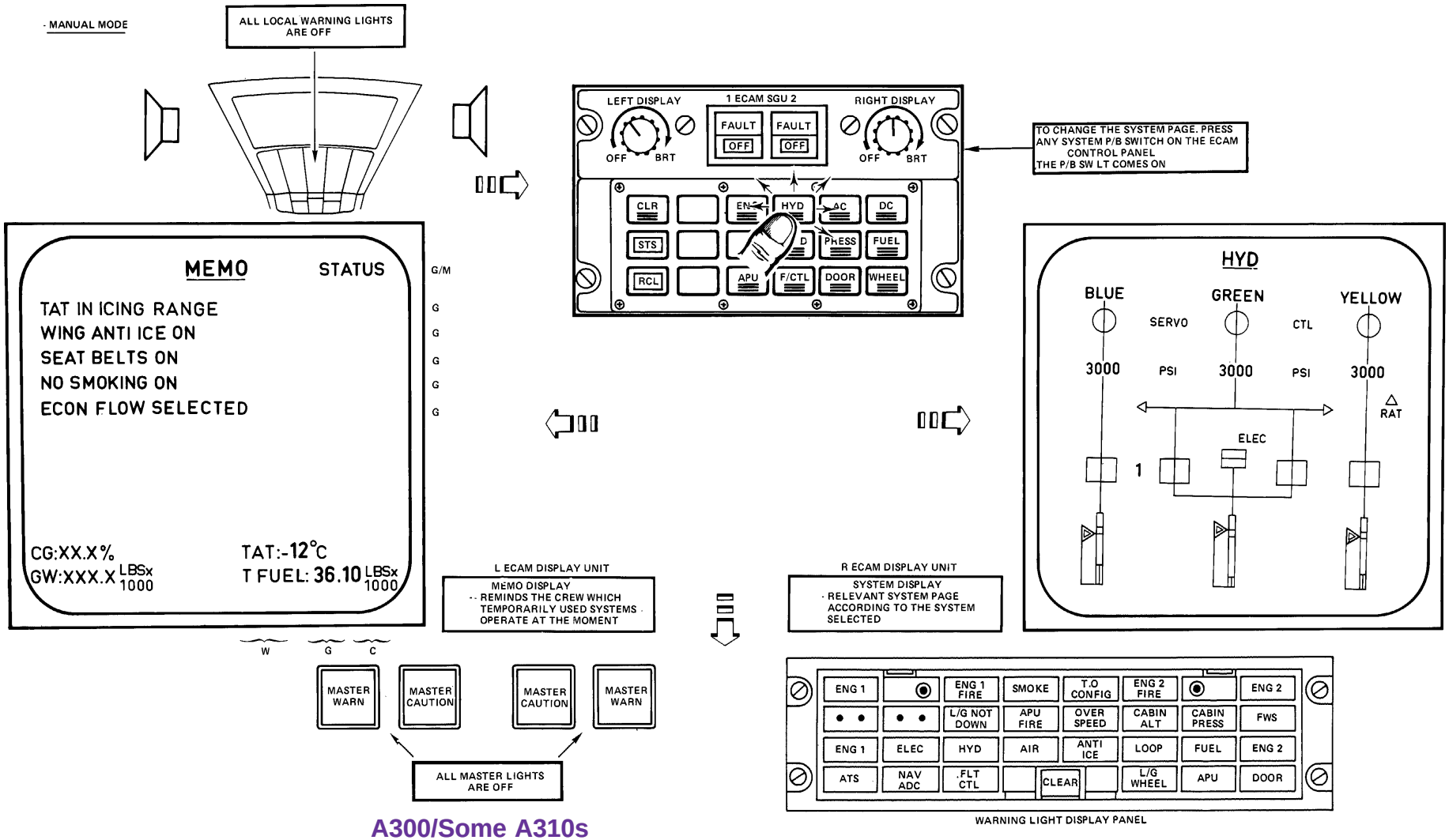
This mode can be engaged at any time but is automatically disengaged by engagement of advisory mode or failure mode.

- The R CRT shows the system page selected by the crew on the ECAM control panel (All the system pages except CRUISE page can be selected).

The CRUISE Page will appear during these conditions:

- During Flight conditions per ECAM system operation.
- When aircraft is up above ground level with nose and wing jacks are in place. Landing gear fully extended.
- Also, during certain ground maintenance conditions with appropriate circuit breakers (CBs) and landing gear ground safety pins installed in the nose and both main landing gear.

ECAM Manual Mode



A300/Some A310s

Some A310s

Operation After FWC Failure

FWC FAILURE

1. FWC 1 or 2: Processing module failure.

   No capability is lost and all the systems will work via the cross talk bus.

2. FWC 1 or 2: Acquisition module failure

   Half of all level 2 and 1 warning inputs are no longer available. All the level 3 warnings are still processed by the FWC and are available and presented by the ECAM System. In this case, the systems have to be monitored on the R ECAM display unit and the overhead panel.

   A. Cancel the MASTER CAUTION light by pressing the pushbutton.

   B. Cancel the FWC 1 or FWC 2 acquisition module failure by pressing the CLEAR pushbutton.

      The left ECAM CRT then displays the message LAND 3 INOP on the status page.

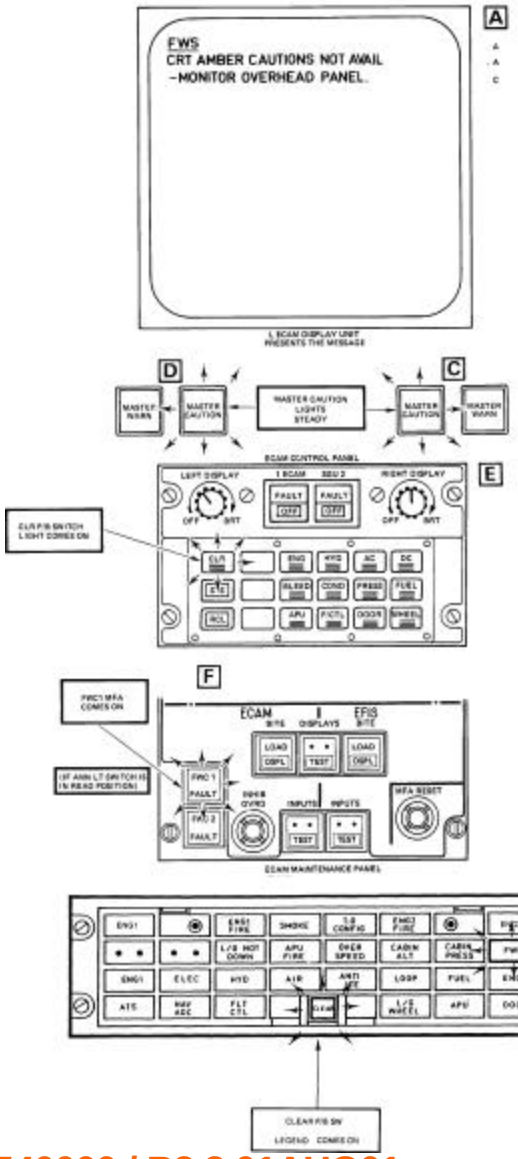
   C. To cancel this STATUS press the CLEAR pushbutton (which extinguishes)

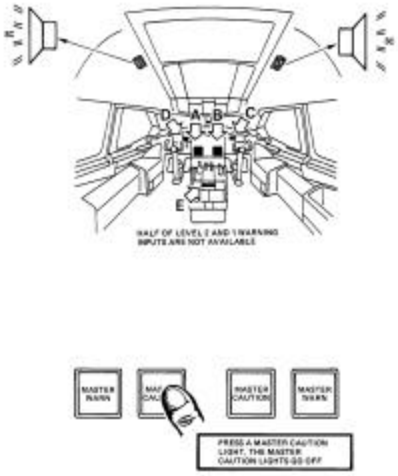
      The left ECAM display unit will permanently display the message:

   D. FWS AMBER FAULT MONITOR SYS on the top of the MEMO page just above the title MEMO.

      For all the level 1 and 2 warnings available, the left ECAM CRT only gives the name of the affected system.

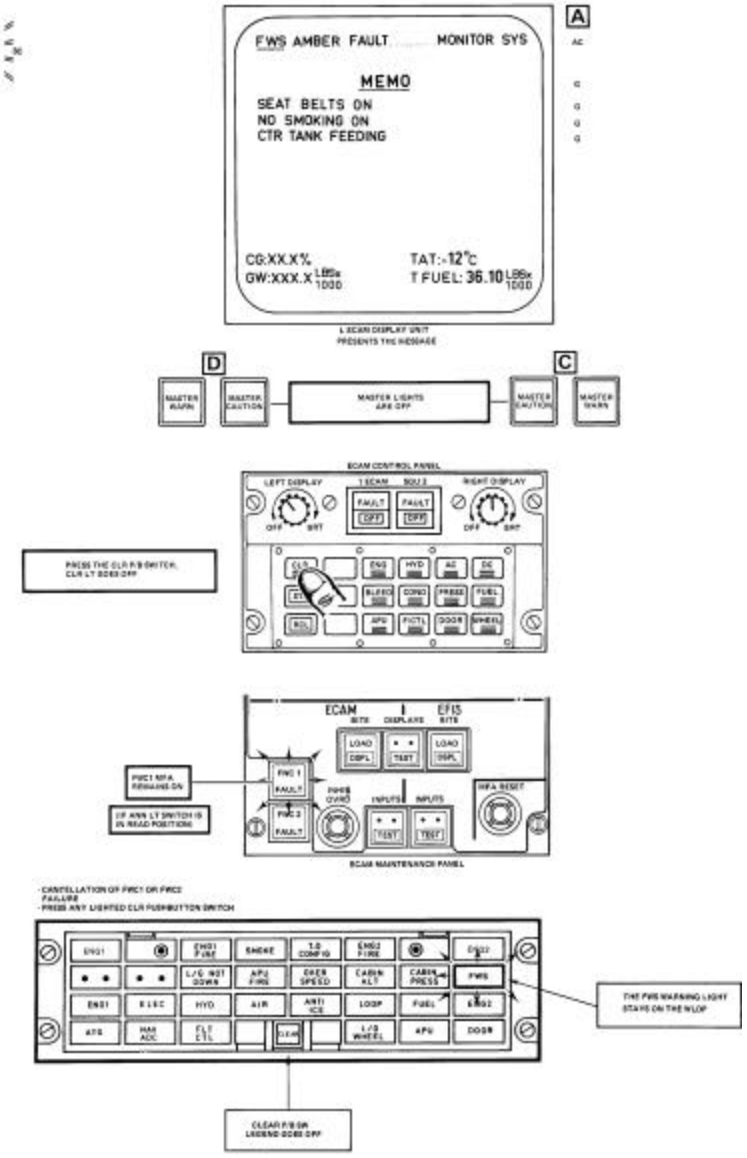
Operation After FWC Failure





A300/Some A310s

Some A310s



System Data Analog Converter (SDAC) Failure

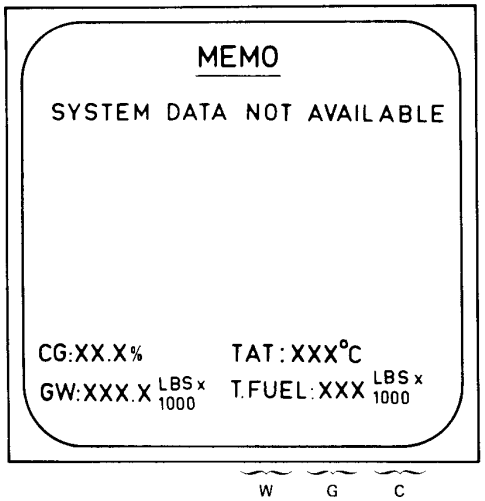
With failure of the System Data Analog Converter (SDAC), 1) the MEMO mode, 2) the system display function and 3) most of the action feedback in the procedure messages are no longer available, except the FUEL QTY indication. Some STATUS messages are also lost.

- Without aircraft system failure
  SYSTEM DATA NOT AVAILABLE is written in amber in the center of the L and R ECAM display units. Furthermore FUEL QTY AVAIL ... FUEL PAGE is displayed on R ECAM display unit.
- With an aircraft system failure
  NO ACTION FEED BACK AVAILABLE is written in amber at the top of the L ECAM display unit. SYSTEM DATA NOT AVAILABLE is written in amber on the R ECAM display unit.

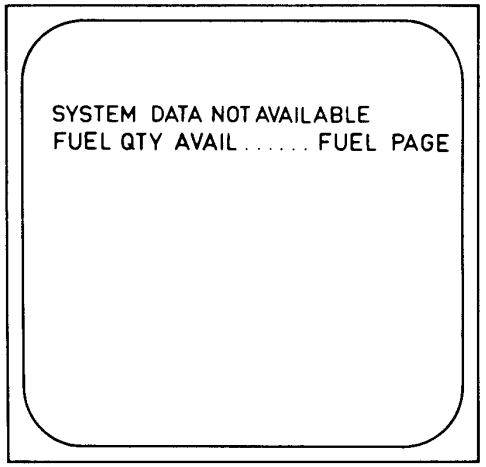
SDAC Failure

1 - WITHOUT AIRCRAFT SYSTEM FAILURE

L ECAM DISPLAY UNIT PRESENTS THE MESSAGE

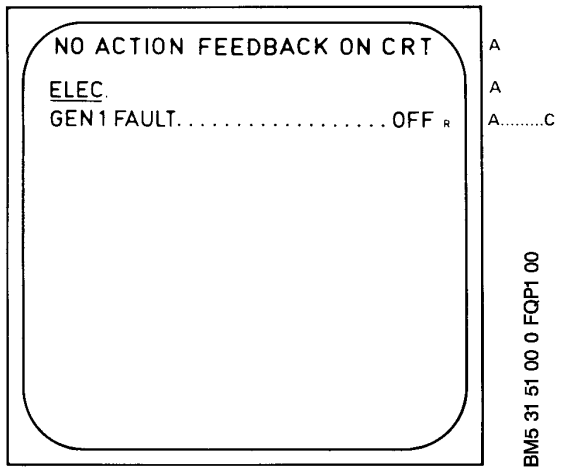


R ECAM DISPLAY UNIT PRESENTS THE MESSAGE

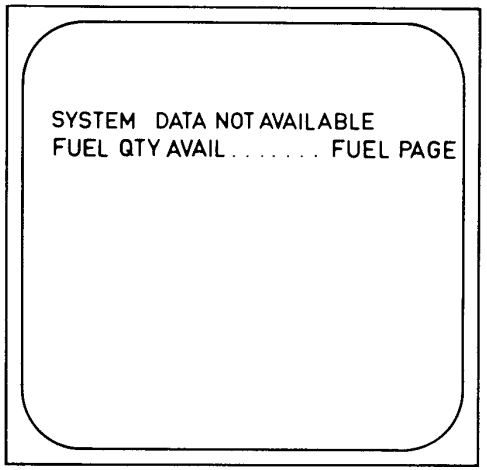


2 - WITH AN AIRCRAFT SYSTEM FAILURE

L ECAM DISPLAY UNIT PRESENTS THE MESSAGE



R ECAM DISPLAY UNIT PRESENTS THE MESSAGE



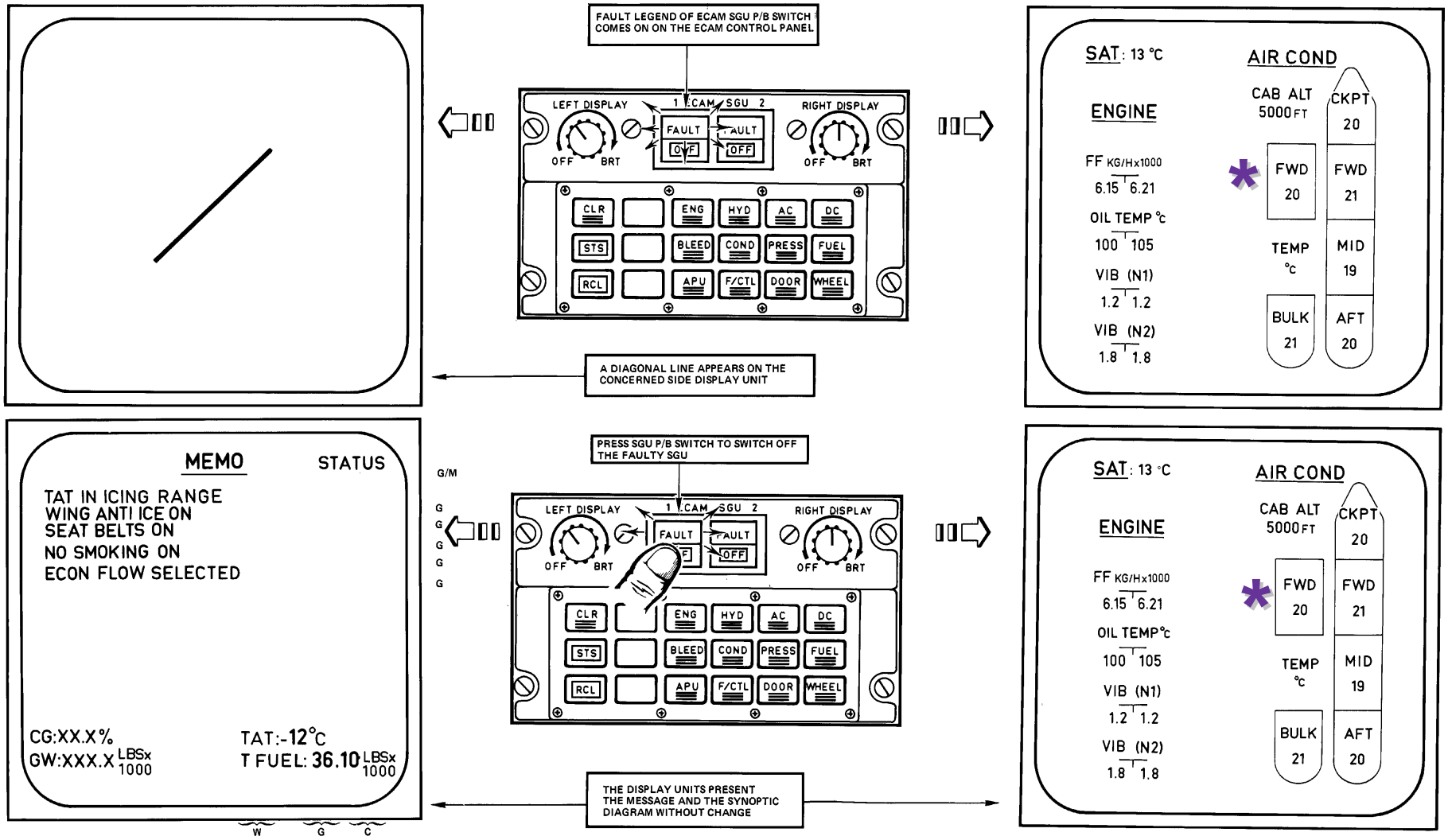
BM5 31 51 00 0 FQP1 00

Symbol Generator Unit (SGU) 1 Or 2 Failure

At first, the corresponding SGU fault light illuminates on the ECAM control panel and a diagonal line appears on the concerned side CRT.

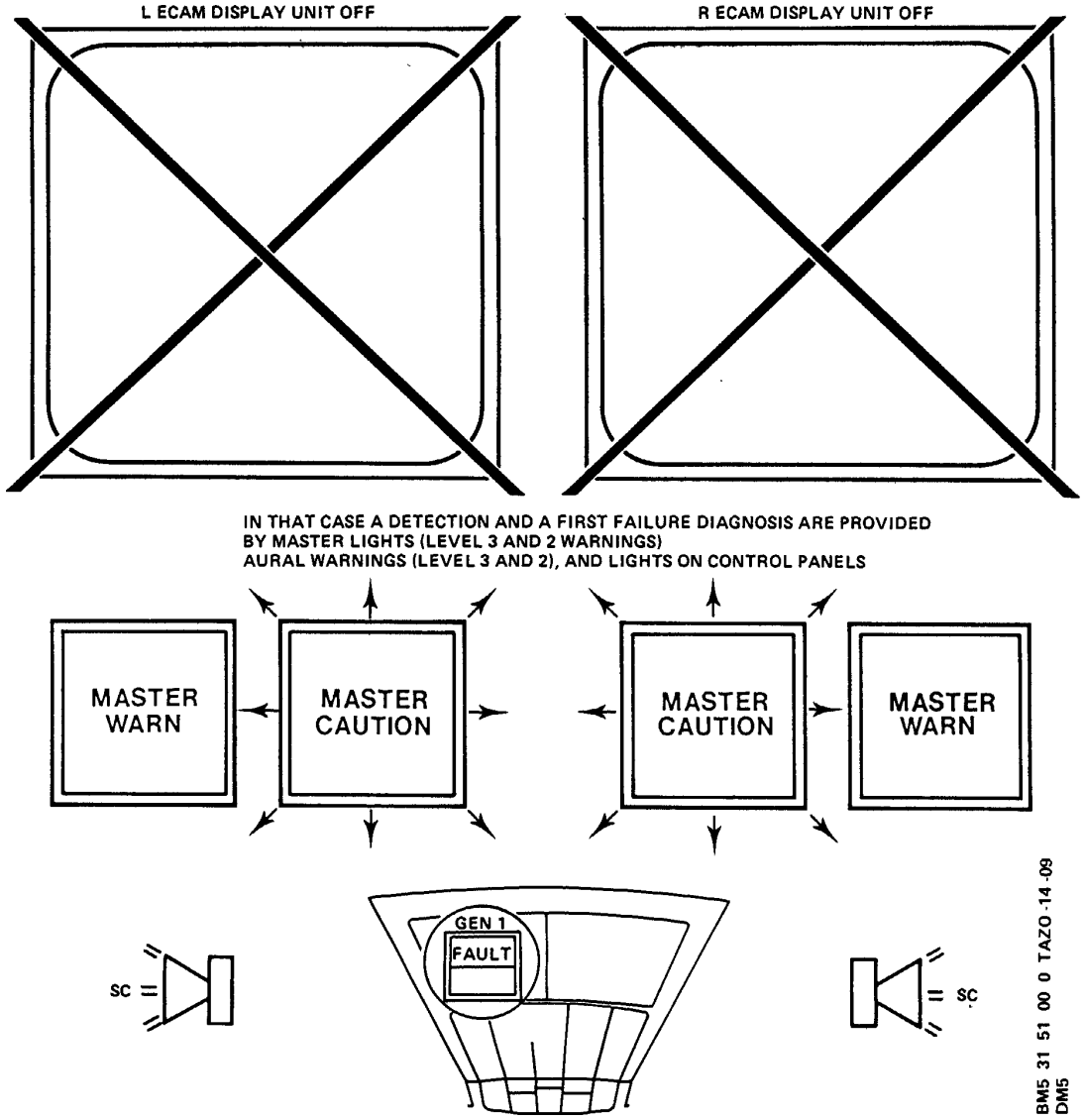
After the failed SGU has been switched off, all the functions will be available and presented with no change to the crew, as each SGU is able to elaborate all the information.

SGU 1 Or 2 Failure

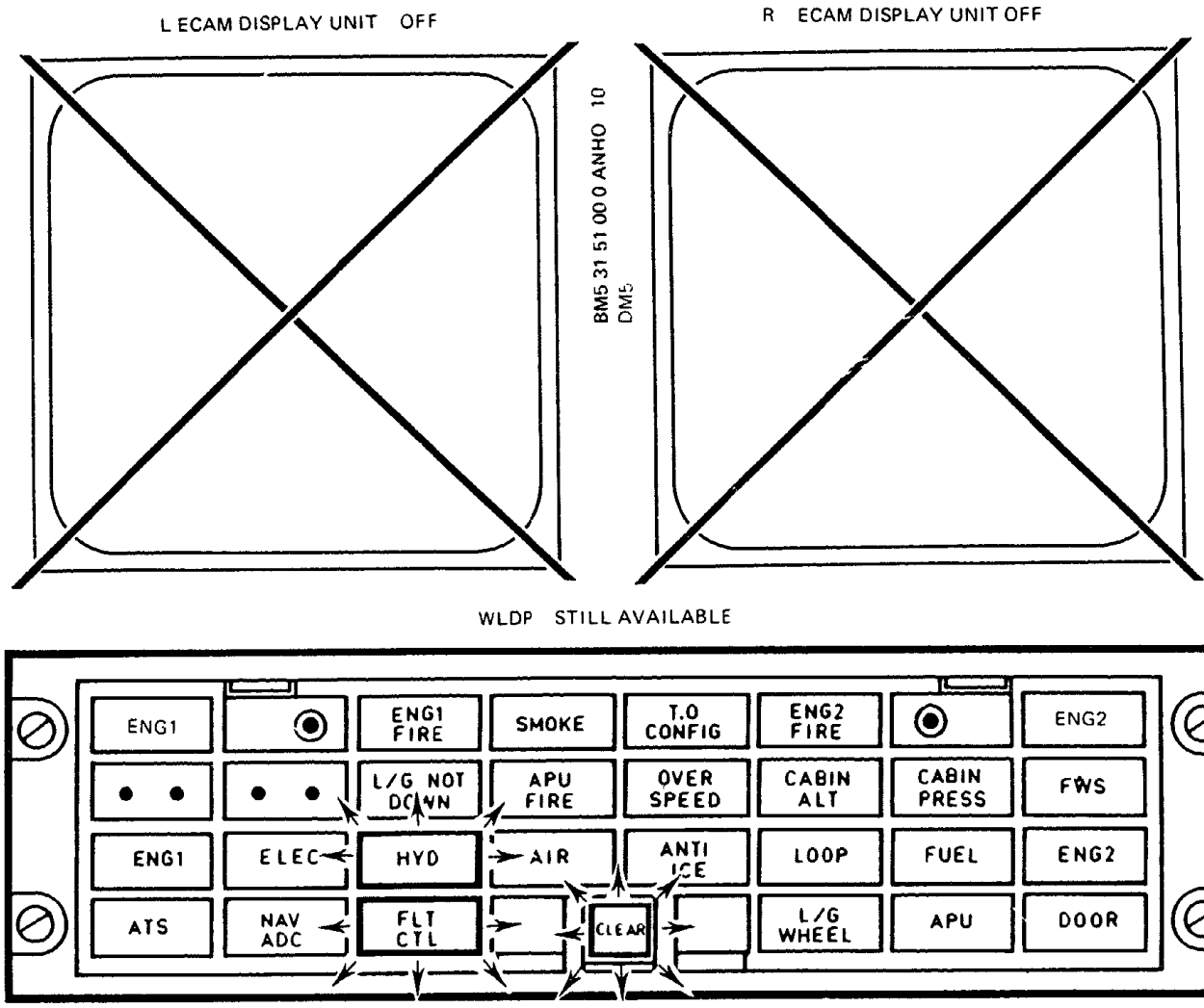


*Some A310s and N/A A300

A300/Some A310s ECAM System - Failure Of Both Display Units

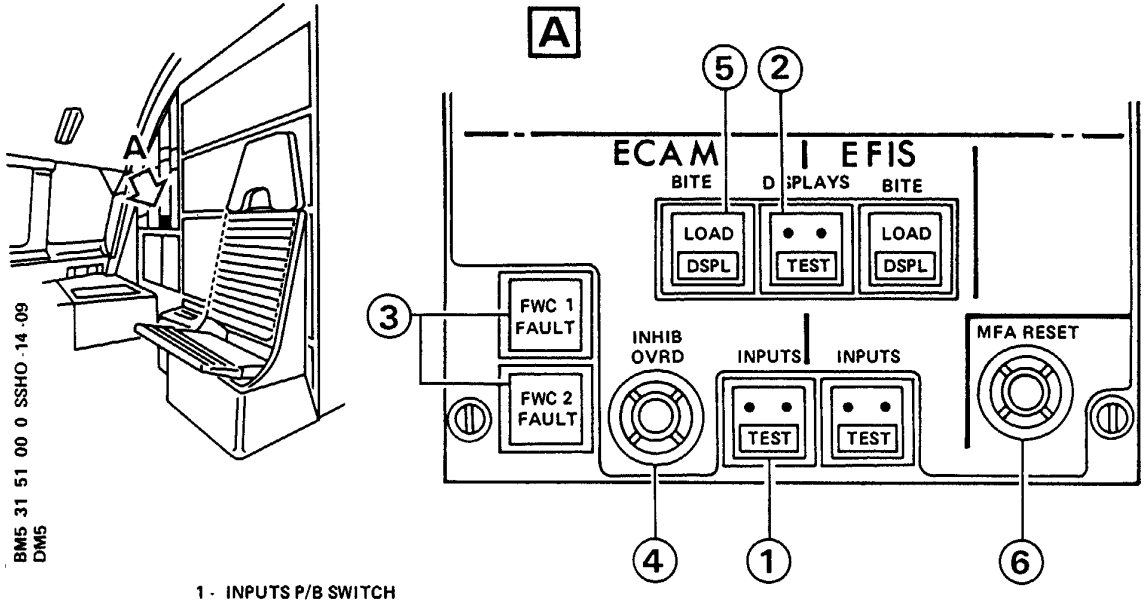

L ECAM DISPLAY UNIT OFF
R ECAM DISPLAY UNIT OFF
IN THAT CASE A DETECTION AND A FIRST FAILURE DIAGNOSIS ARE PROVIDED
BY MASTER LIGHTS (LEVEL 3 AND 2 WARNINGS)
AURAL WARNINGS (LEVEL 3 AND 2), AND LIGHTS ON CONTROL PANELS
MASTER WARN
MASTER CAUTION
MASTER CAUTION
MASTER WARN
SC
GEN 1
FAULT
SC
BM5 31 51 00 0 TAZO 14 09
DM5

Some A310s ECAM System - Failure Of Both Display Units



DIAGNOSIS OF THE FAILURE STILL POSSIBLE :
PRIMARY FAILURE : FLASHING LIGHT
SECONDARY OR INDEPENDENT FAILURE : STEADY LIGHT

A300/Some A310s ECAM Maintenance Panel - General Features



1 - INPUTS P/B SWITCH
PRESSING IT CAUSES THE TEST LEGEND TO COME ON WHITE AND INITIATES THE INPUTS BITE TEST. THE WRONG INPUTS OF THE ECAM SYSTEM APPEAR IN CODED FORM ON THE ECAM DISPLAY UNITS. (ONLY DURING FLIGHT PHASES 1 AND 12).

2 - DISPLAYS P/B SWITCH.
PRESSING IT CAUSES THE TEST LEGEND TO COME ON WHITE AND INITIATES THE SGUs INTERNAL SELF TEST. THIS TEST ENABLES THE DISPLAY QUALITY TO BE CHECKED. A TYPICAL TEST PATTERN APPEARS ON EACH, ECAM DISPLAY UNIT. INHIBITED FROM FLIGHT PHASES 4 TO 10).

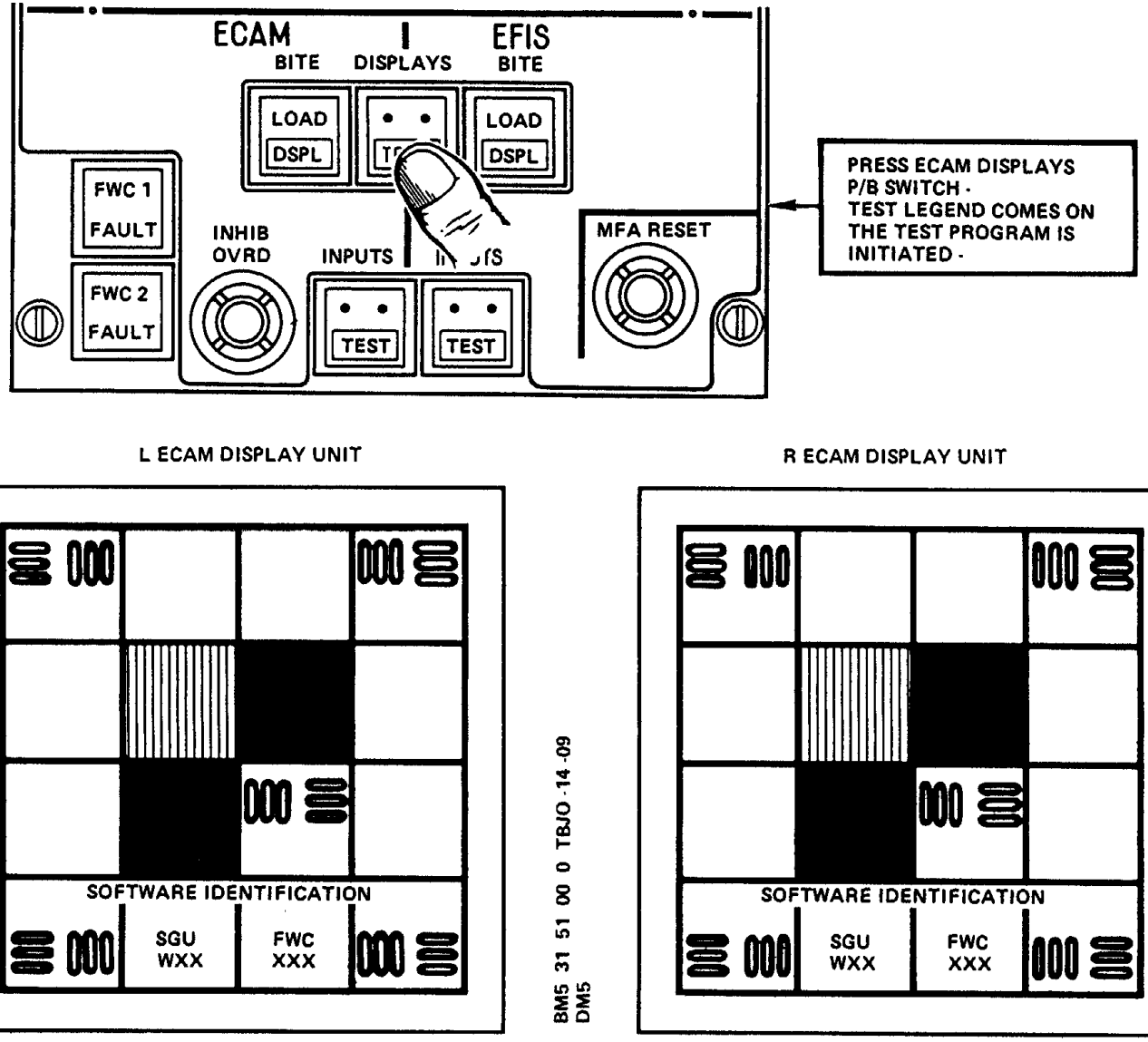
3 - FWC1/FWC2 FAULT MFA'S COME ON WHITE WHEN THE CORRESPONDING LRU FAILS, PROVIDED THAT ANN LT SWITCH IS PLACED IN READ POSITION (472VU).

4 - INHIB OVRD P/B SWITCH ALLOWS THE PRESENTATION OF WARNINGS INHIBITED ON GROUND, WHEN BOTH ENGINES ARE SHUT DOWN (FLIGHT PHASE 1).

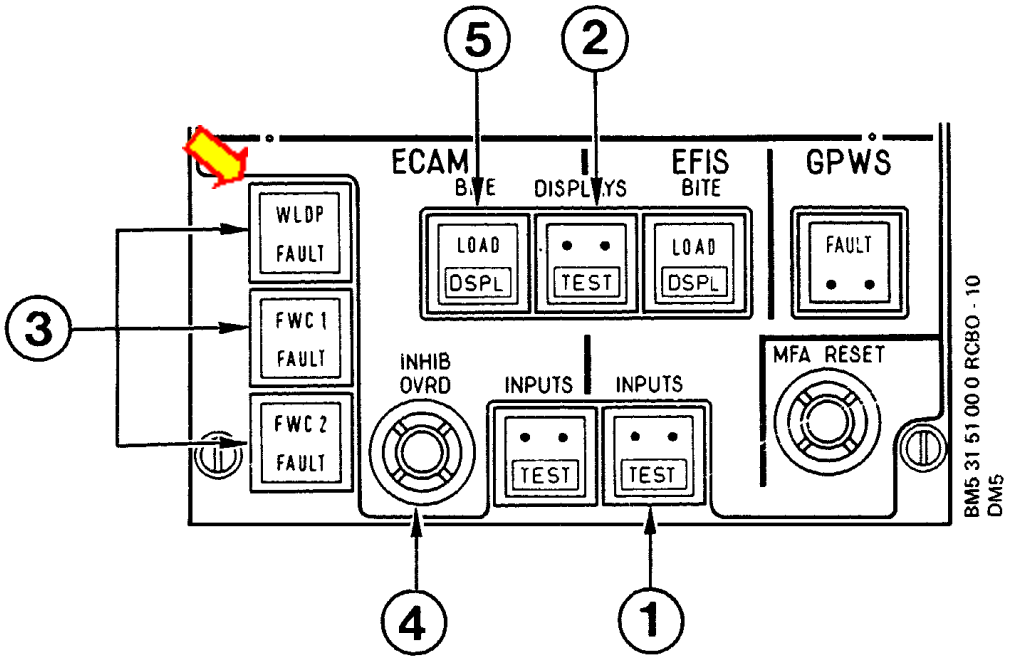
5 - BITE P/B SWITCH
LOAD LEGEND OF BITE P/B SWITCH COMES ON EACH TIME AN INTERNAL FAILURE EVENT IS MEMORIZED IN THE BITE MEMORIES OF SGU1 (AND 2) AND FWC1 (AND 2) PROVIDED THAT ANN LT SWITCH IS PLACED IN READ POSITION.
ENGAGEMENT OF THE BITE DISPLAY FUNCTION WILL CALL SGU1(2) AND FWC1(2) BITE MEMORY CONTENTS ON LEFT AND RIGHT DISPLAY UNITS (ONLY DURING FLIGHT PHASES 1 AND 12)

6 - MFA RESET P/B SWITCH ALLOWS TO EXTINGUISH ALL THE MEMORIZED FAULT ANNUNCIATORS (MFA) LOCATED ON PANEL 470VU. ON THIS FIGURE, ONLY FWC1 AND FWC2 FAULT MFA'S ARE CONCERNED.

A300/Some A310s ECAM Maintenance Panel - Display Test



Some A310s ECAM Maintenance Panel - General Features



-1- INPUTS P/B SWITCH
PRESSING IT CAUSES THE TEST LEGEND TO COME ON WHITE AND INITIATES THE INPUTS BITE TEST.
THE WRONG INPUTS OF THE ECAM SYSTEM APPEAR IN CODED FORM ON THE ECAM DISPLAY UNITS.

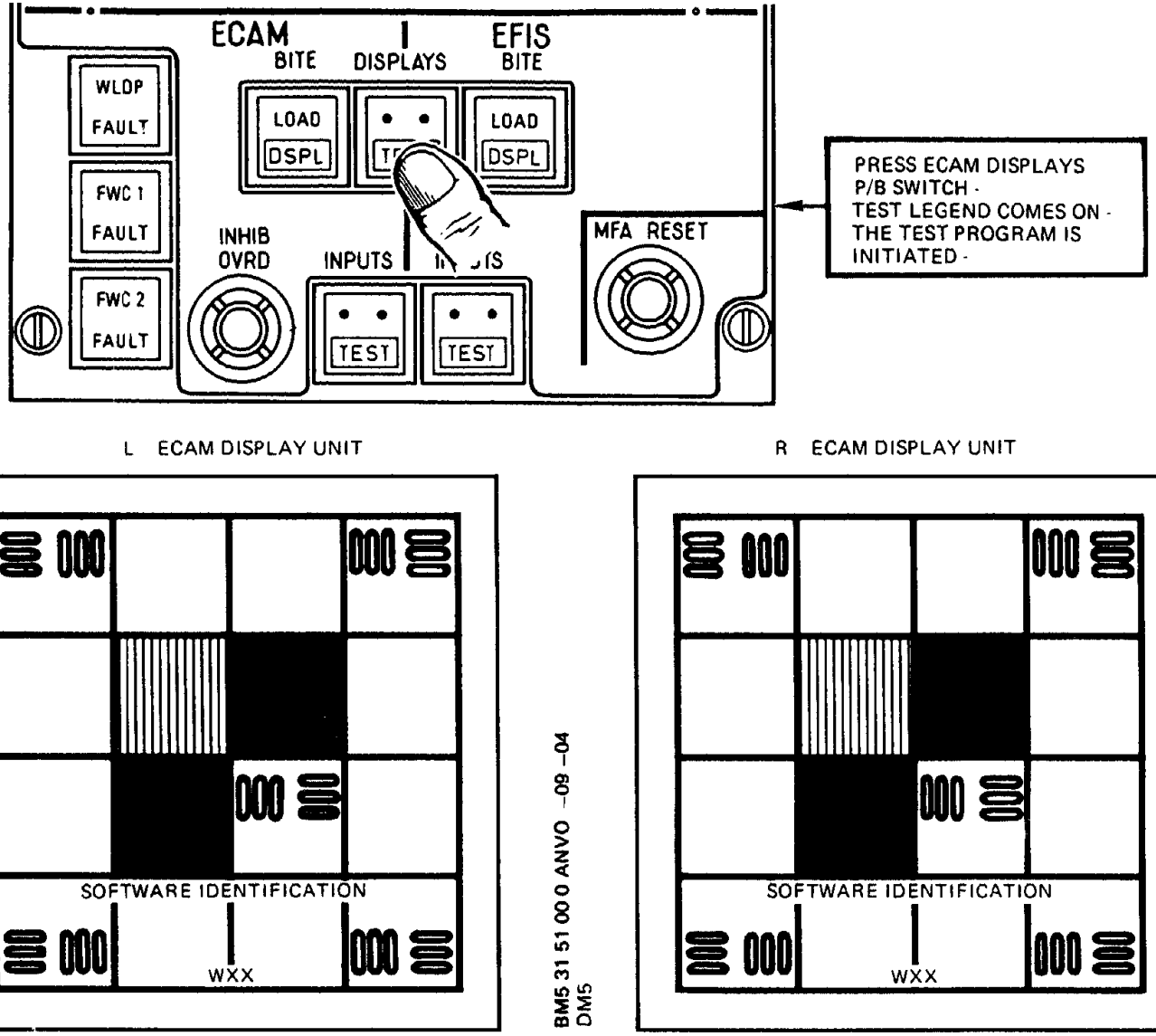
-2- DISPLAYS P/B SWITCH
PRESSING IT CAUSES THE TEST LEGEND TO COME ON WHITE AND INITIATES THE SGUS INTERNAL SELF TEST. THIS TEST ENABLES THE DISPLAY QUALITY TO BE CHECKED.
A TYPICAL TEST PATTERN APPEARS ON EACH ECAM DISPLAY UNIT.

-3- WLDP/FWC1/FWC2 FAULT ANNUNCIATOR LEGENDS COME ON WHITE IN CONJUNCTION WITH THE FWS WARNING LIGHT ON THE WLDP, WHEN THE CORRESPONDING LRU FAILS.

-4- INHIB OVRD P/B SWITCH ALLOWS THE PRESENTATION OF WARNINGS INHIBITED ON GROUND, WHEN BOTH ENGINES ARE SHUT DOWN (FLIGHT PHASE 1).

-5- BITE P/B SWITCH
LOAD LEGEND OF BITE P/B SWITCH COMES ON EACH TIME A FAILURE EVENT IS MEMORIZED IN THE BITE MEMORIES OF SGU1 (AND 2) AND FWC1 (AND 2).
ENGAGEMENT OF THE BITE DISPLAY FUNCTION WILL CALL SGU1 (2) AND FWC1 (2) BITE MEMORY CONTENTS ON LEFT AND RIGHT DISPLAY UNITS.

Some A310s ECAM Maintenance Panel - Display Test



A300/A310 Circuit Breaker Monitoring System

The initial function of the circuit breakers is to protect the aircraft wiring against overheat in case of short circuit.

- Nevertheless, circuit breakers are frequently used on the ground to isolate electrical circuits for maintenance purpose.
- This implies that during flight compartment preparation, it must be checked that no circuit breaker has been left open by maintenance personnel.
- The circuit breaker monitoring system is designed to simplify and optimize this check.,
- This system, however, is not designed to monitor circuit breakers in flight as such failures (amongst others) have been taken into account by the safety analysis of the corresponding system.
- In practice, it is never required to close a circuit breaker in flight, since except in the case of circuit failure, the most probable cause of tripping is a true short circuit.

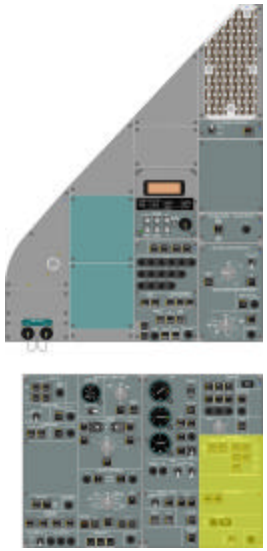
The system comprises monitored circuit breakers which send an electrical signal when opened and a display panel enabling the open circuit breakers to be localized panel by panel.

Monitored Circuit Breakers

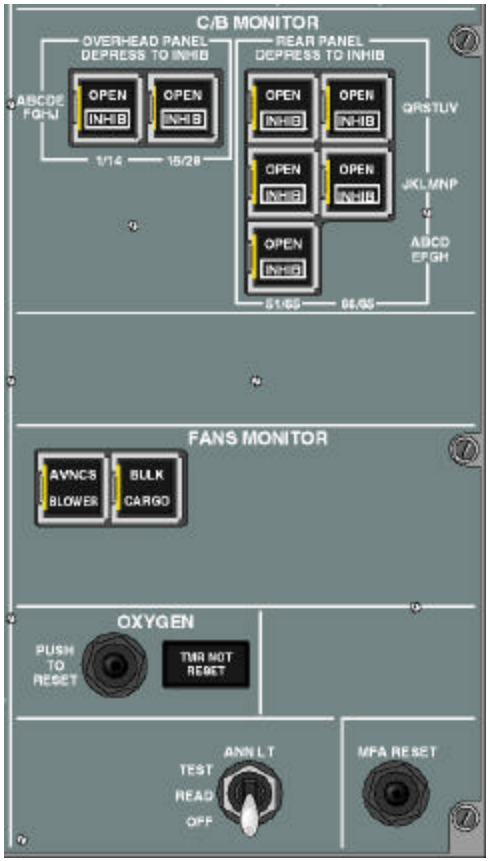
These circuit breakers are fitted with secondary contacts, the operation of which is reversed with respect to primary contacts:

- the secondary contacts provide an electrical continuity (closed circuit) when the circuit breaker is opened.
- the secondary contacts provide an electrical discontinuity (open circuit) when the circuit breaker is closed.
- only the Green C/B's are monitored.

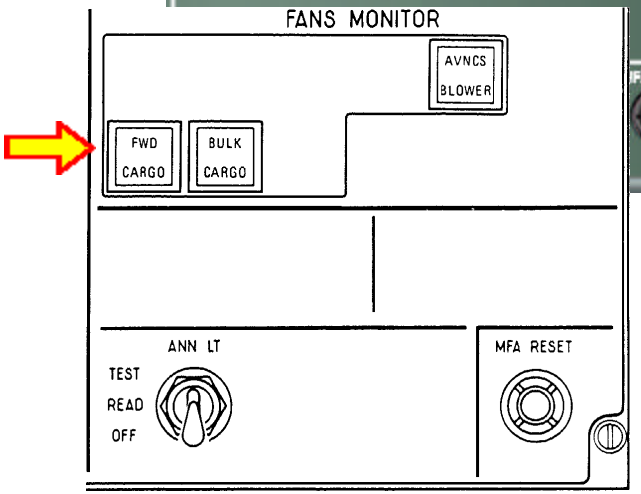
A300/A310 Circuit Breaker Monitoring System

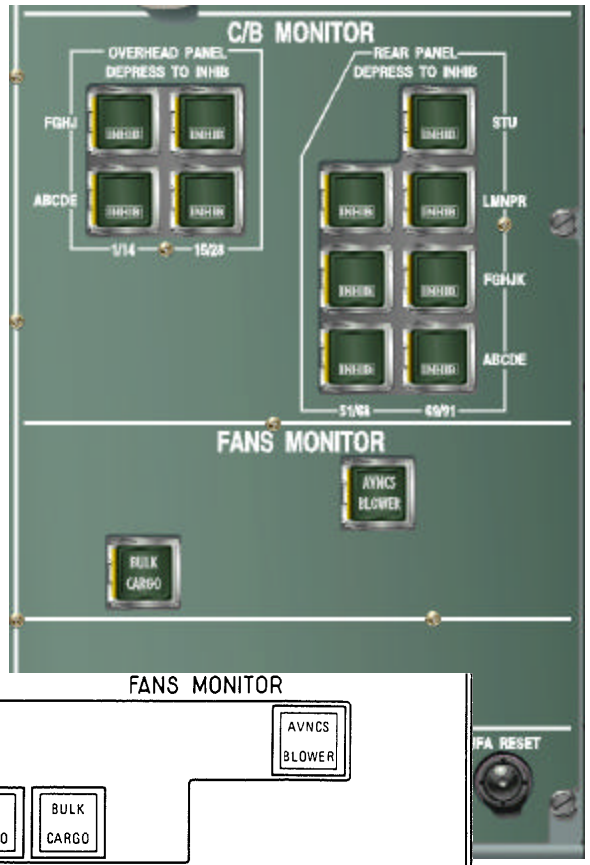


A300/Some A310s



Some A310s





FAA/FedEx Circuit Breaker Reset

OFFICE MEMORANDUM

DATE: September 19, 2000
TO: Mark Yerger
CC: Ire Wilson
FROM: Thomas Westling
RE: Circuit Breaker Reset

Mark,

Attached fiend a copy of a Flight Standards Information. Bulletin, submitted bar tae local FSDO. This document r refers to procedures for resetting Circuit Breakers both "In Flight" and "On the Ground." It encourages FedEx to incorporate this data. in our Maintenance Manuals, Aircraft Servicing Manuals, and Flight Crew Operating Manuals. There are some instances in the troubleshooting sections of some of our Maintenance Manuals that alludes to this procedure, but nothing that covers all tripped circuit breaker instances, In fact, the Airbus Maintenance Manual specifically reflects the practices shown in. the Bulletin in ATA chapter 24. However, this is not the case with all fleets.

To add this to our Manuals, that do not cover this action, will require the participation of Aircraft Engineering. Perhaps ATA 24 or 20 would be the proper place far this addendum. Please advise me of the completion status and I will issue a Maintenance Alert referring to this troubleshooting requirement.

Your assistance would be greatly appreciated

Regards,
[Signed]
Thomas Westling
Director of Maintenace
Federal Express
901-224-8361
COMAT: 38194/1085

ORDERS:	8300.10, 8400.10, and 8700.10
APPENDIX:	4
BULLETIN TYPE:	Joint Flight Standards Information Bulletin for Airworthiness (FSAW), Air Transportation (FSAT), and General Aviation (FSGA)
BULLETIN NUMBER:	FSAW 00-08, FSAT 00-07, and FSGA 00-04
BULLETIN TITLE:	Resetting Tripped Circuit Breakers
EFFECTIVE DATE:	08-21-00
TRACKING:	N/A
APPLICABILITY:	

NOTE: THIS BULLETIN REQUIRES PTRS INPUT. SEE ITEM # 6.

1. PURPOSE. The purpose of this bulletin is to summarize Federal Aviation Administration (FAA) guidance regarding resetting tripped circuit breakers (CB). Specific objectives are:

   A. To increase awareness in High flightcrews, maintenance personnel, and. ground servicing personnel of safety information arid recommended procedures generated by manufacturers in respect to resetting trapped CB's.

   B. To ensure that approved operating procedures generated by manufacturers to ensure safe flight operations is incorporated in the manuals used by flightcrews and maintenance personnel, and in their training programs.

   C. To encourage operators to establish company policies and procedures regarding the resetting of tripped CBs. The

policies and procedures should emphasize the potential hazards of resetting a tripped CB.

2. BACKGROUND. Historically flightcrews, maintenance personnel, and airplane ground servicing personnel, e.g., airplane cleaners, airplane fuelers, and baggage loading personnel have viewed the resetting of a CB as a relatively common occurrence in operations. Generally, resetting a CB is met with no adverse results. However, a review of Service Difficulty Reports involving tripped and reset CBs reveals that the opposite is sometimes true. Smoke, burned wires, electrical odors, arcing, and loss of related aircraft systems have been reported as a result of resetting tripped CBs.

3. DISCUSSION. Airplane manufacturers normally provide guidance in, their flightcrew operating manuals (FCOM), maintenance manuals, and airplane servicing manuals that enables flightcrews, maintenance personnel, and airplane ground servicing personnel to perform their tasks with a high degree of safety. This guidance generally addresses the resetting of tripped CBs. Operators should ensure that specific CB resetting procedures based on manufacturer's guidance is reflected in their manuals. The FAA has developed the following summary statement to emphasize the importance of caution in resetting tripped CBs and to recommend certain general safety practices.

4. SUMMARY STATEMENT. The following statement summarizes FAA philosophy, policy, and regulations in respect to resettting tripped CBs. The overriding message is one of caution. Operators should develop training programs and manuals for use by flightcrews, maintenance personnel and airplane ground servicing personnel in which company policies and procedures with regard to resetting tripped CBs are clearly stated and readily available. Operator's policies and procedures should promote general awareness of safety concerns associated with resetting tripped CBs and should stress the importance of strict adherence to specific safety guidance generated try the manufacturer.

A. General. There is s a latent danger in resetting CB tripped by an unknown cause because the tripped condition is a signal that something may be wrong in the related circuit. Until it is determined what has caused a trip to occur, a flightcrew, maintenance, or airplane ground servicing personnel usually have no way of knowing the consequences of resetting a tripped CB. Resetting a CB tripped by an unknown cause should normally be a maintenance function conduced on the ground.

B. In-Flight. A tripped CB should not be reset in flight unless doing so is consistent with explicit procedures specified ire the approved operating manual used by the flightcrew or unless, in the judgment of tie captain, resetting the CB is necessary for the safe completion of the flight. A logbook write-up including a description of the exact conditions then the trip occurred, when the CB was reset, and the results of resetting the CB is an appropriate safety practice for tracking purposes and may provide the key to effective a trouble-shooting and corrective action by maintenance or the ground.

C. On-the-Ground. A CB tripped by an unknown cause may be reset on-the-ground after maintenance has determined the cause of the trip and has determined that the C.3 may be safely reset.. A CB ray sae cycled (tripped or reset) as part of art approved trouble-shooting procedure, unless doing spa so is s specifically Prohibited for the conditions existing. If an operator's minimum equipment list (MEL) contains procedures that allow a tripped CB to be reset, then the same cautions with reference to resetting tripped CB's identified elsewhere in this bullet-n also apply.

D. CB Associated with Fuel Pump Circuit. Special caution is appropriate where fuel pumps are involved, because of the possibility that arcing might lead to ignition of fuel or fuel vapors. The FAA has issued airworthiness directives (AD) affecting certain airplane rakes and models that prohibit tae resetting of fuel. boost pump CB's in-flight. Those ADs

also prohibit resetting a fuel boost. pump CB while the airplane is on the ground, without first identifying the source of the electrical fault.

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5. ACTION. Principal Operations Inspectors (POI), Principal Avionics Inspectors (PAI), and Principal Maintenance Inspectors (PMI) shall ensure that their assigned operators conduct a review of their operating and maintenance manuals to ensure the contents adequately address resetting tripped GB's. Inspectors shall strongly recommend that operating, maintenance, and airplane ground servicing personnel manuals, as well as training programs contain company policies and explicit procedures regarding resetting tipped CB's, both in-flight and on-the-ground. The procedures shown in the manuals cased by the operator's flightcrews, maintenance personnel, and airplane ground servicing personnel should be consistent with the airplane manufacturer's guidance and this bulletin.
6. PROGRAM TRACKING REPORTING SUBSYSTEMS (PTRS) INPUT. In order to track the monitoring activity associated with this CB resetting policy, the inspector shall enter the pertinent manual surveillance code (e.g., 162.1 for Pole 5.526 for PAI, or 3626 for PMI) in the appropriate block of tie PTRS Tracking Form 8000-36. In the case of an air carrier, it is also important try complete the Designator Block with the appropriate air carrier designator code.
7. INQUIRIES. This bulletin was developed jointly by AFS-200 and AC'S-300, in coordination with SEA AEG and ANM-100. If there are questions or comments regarding this bulletin, contact Fred Sobeck, Continuous Airworthiness Maintenance Division, AFS-300, at (202) 267-7355.
8. EXPIRATION DATE. This bulletin will expire on 08-31-01.

[Signed]
Nicolas Lacey
Director, Flight Standards Service

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A300/A310 Instrument Panel Clocks

GMT is provided by two fully independent clocks.

- one clock on Captain's main instrument panel;
- one clock on First Officer's main instrument panel.

These two clocks are each associated with a pushbutton located on the respective control wheels, which controls the chronometric function.

Captain's clock provides a GMT output for FMC 1. F/O's clock provides a GMT output for the digital flight data recorder and for FMC 2.

Each clock is powered by two electrical circuits with ore circuit connected directly to the aircraft batteries.

This enables time to be counted in memory throughout the period that aircraft is parked.

1. GMT Counter
   Displays hours, minutes and tenths of a second.

2. GMT Selector Switch
   This four-position selector switch controls the GMT setting:
   - FAST set time rapidly (1 h/s)
   - SLOW set time slowly (1 mn/s)
   - HLD time is frozen
   - RUN normal position

NOTE: HLD, SLOW and FAST positions are selected by first pressing then rotating the GMT selector switch.,

3. ELAPSED TIME Counter
   Shows hours and minutes. Operates when ET selector is activated. ET indication is shown. Counting continues even if CHRO function is activated.'

4. CHRO Pushbutton
   Press once to start, once to stop, once to zero (CHRO counter and pointer). After the third press ELAPSED TIME is displayed again.

5. CHRO Counter
   Operated when CHRO pushbutton is activated. CHRO indication is shown. Only minutes are indicated.

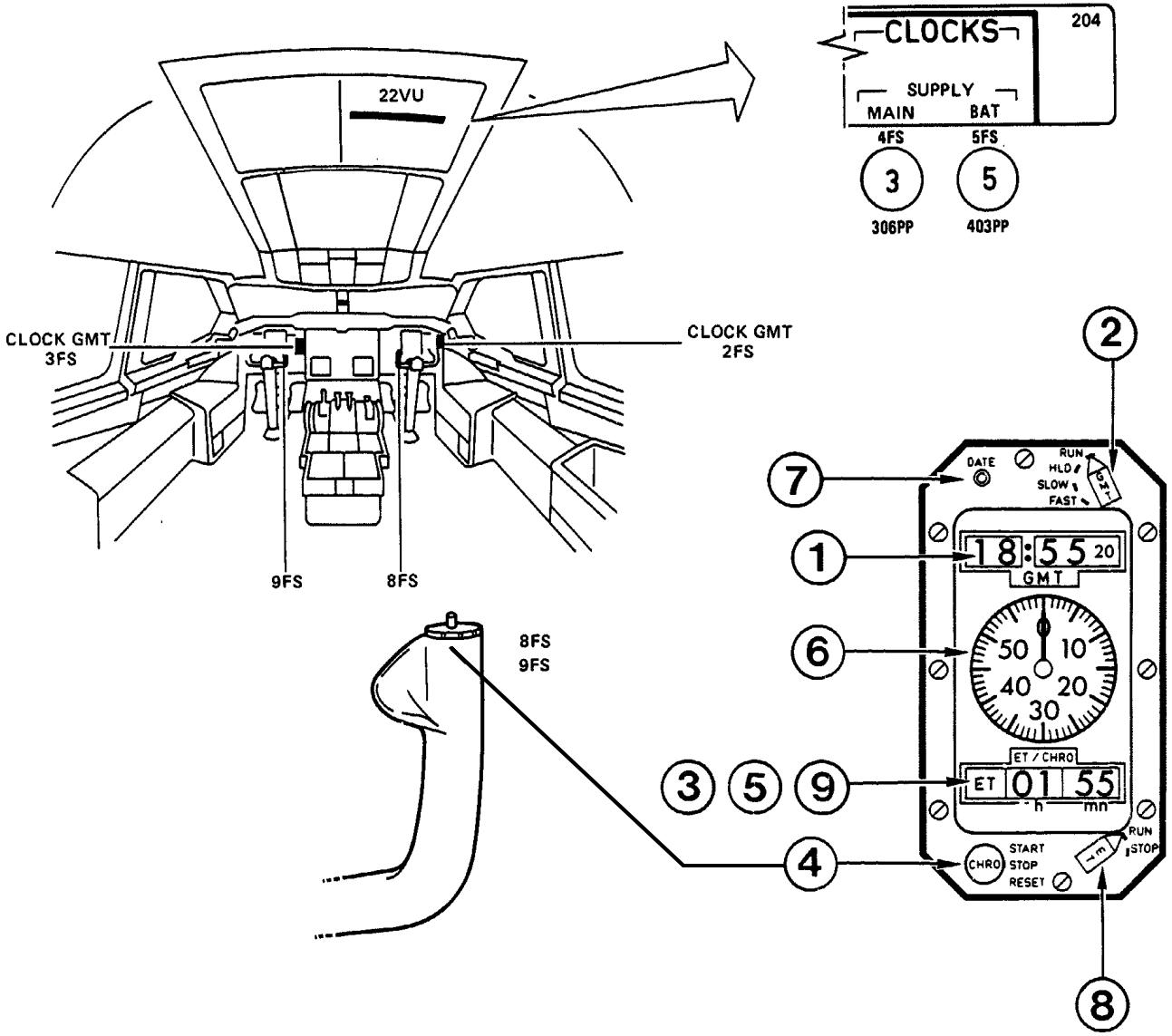
6. CHRONOMETER pointer
   Rotates when CHRO pushbutton is activated. It completes one turn in 60 seconds.

7. Data Command
   As long as the pushbutton is pressed-in, GMT hour is replaced by date.

8. ET Selector Switch
   - STOP: ET Counter stops
   - RUN: ET Counter is reset to zero and starts.

9. OFF Flag
   In case of aircraft power supply failure, all indications are frozen and the OFF' flag appears. After aircraft power supply recovers, all indications recover correct values.

A300/A310 Instrument Panel Clocks



SDAC Inoperative

NOTE:

The A300 and A310 aircraft have only one (1) SDAC (System Data Analog Converter) installed in the aircraft.

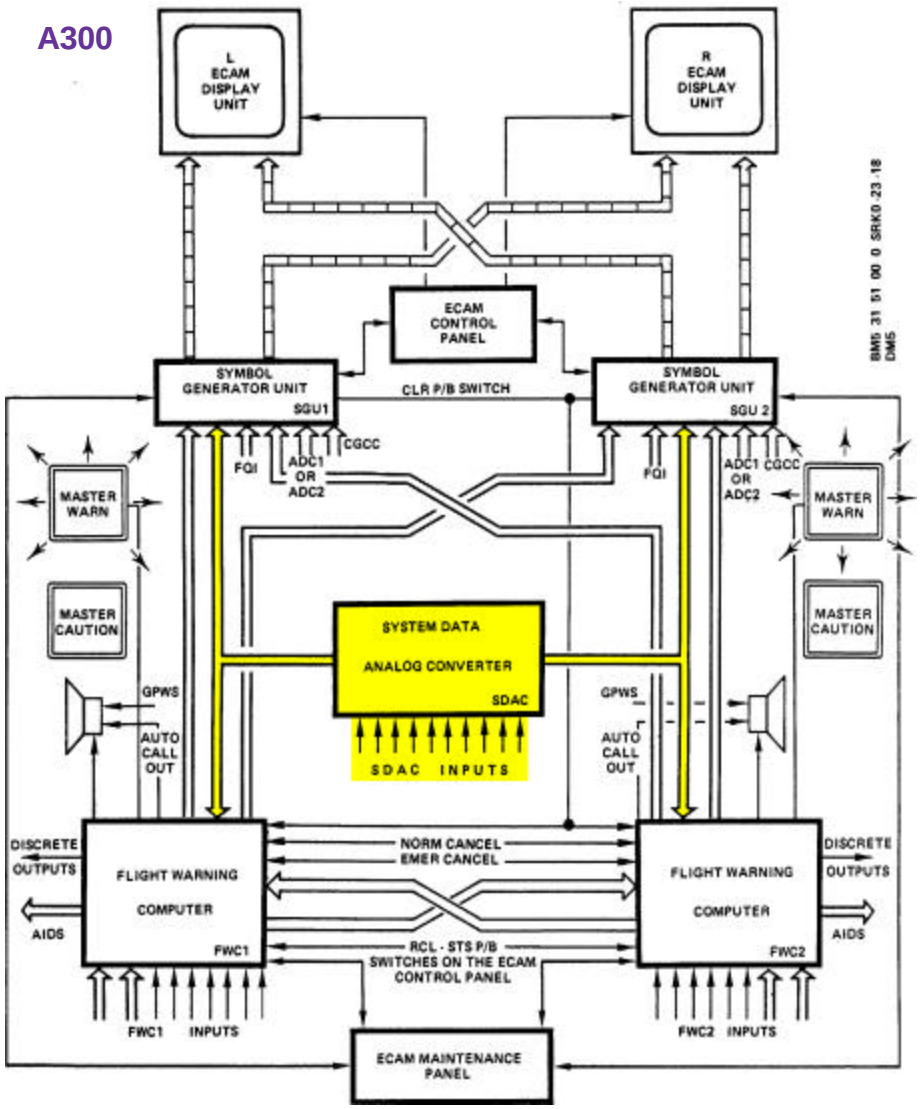
The SDAC acquires various data and converts it into digital format for further processing and use by the ECAM System. The digitized format is used by the ECAM System as indicated by the block diagram.

This is why the SDAC is **ALWAYS REQUIRED** for aircraft dispatch.

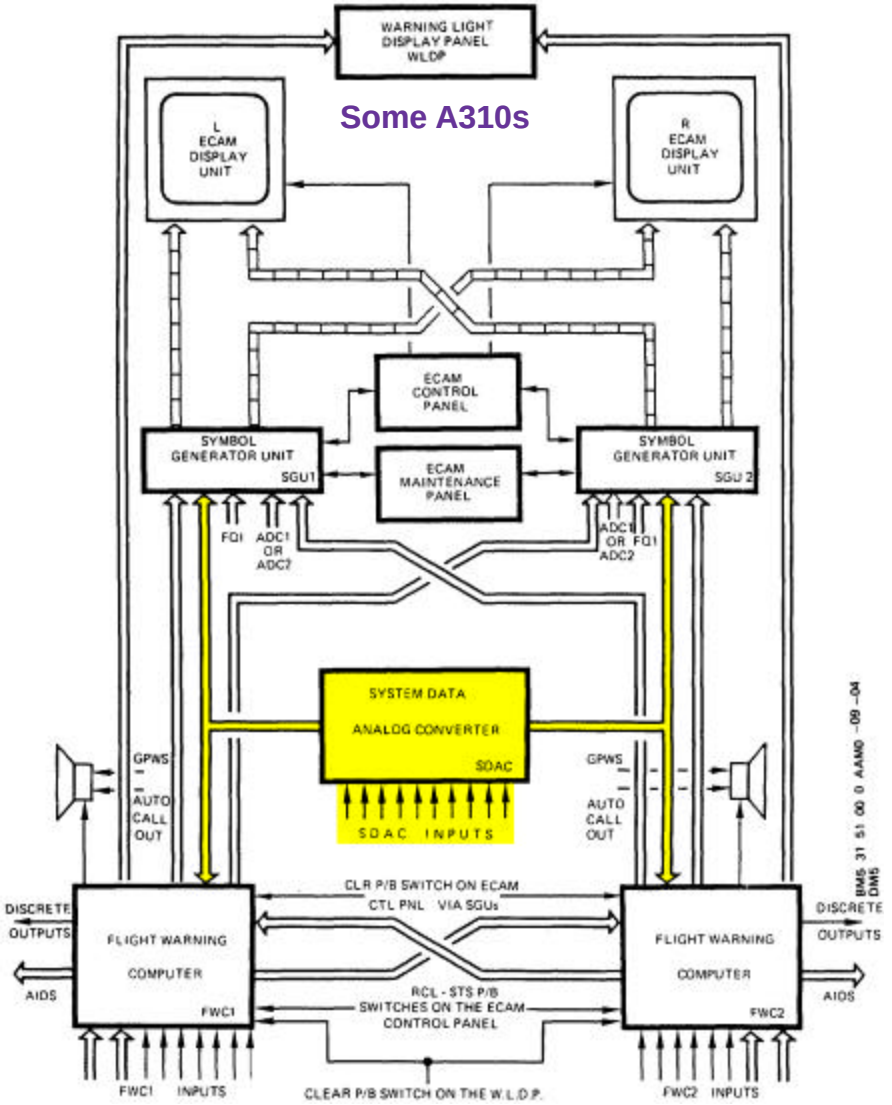
No MEL for this condition exists in the FedEx A300/A310 Minimum Equipment List (MEL) since SDAC is required for flight conditions.

SDAC Inoperative

A300



Some A310s


WARNING LIGHT DISPLAY PANEL WLDP
L ECAM DISPLAY UNIT
R ECAM DISPLAY UNIT
ECAM CONTROL PANEL
ECAM MAINTENANCE PANEL
SYMBOL GENERATOR UNIT SGU1
SYMBOL GENERATOR UNIT SGU 2
FQI
ADC1 OR ADC2
SYSTEM DATA ANALOG CONVERTER SDAC
SDAC INPUTS
GPWS
AUTO CALL OUT
DISCRETE OUTPUTS
FLIGHT WARNING COMPUTER FWC1
FLIGHT WARNING COMPUTER FWC2
CLR P/B SWITCH ON ECAM CTL PNL VIA SGUs
RCL - STS P/B SWITCHES ON THE ECAM CONTROL PANEL
AIDS
FWC1 INPUTS
FWC2 INPUTS
CLEAR P/B SWITCH ON THE W.L.D.P.
BMS 31 51 00 0 AAM0 -09 -04 DM5

Airbus ATA 31 ECAM Quick Quiz

The following quiz covers training areas to further increase your knowledge and skills of the Airbus A300/A310 aircraft and other areas of importance to you...

1. WHICH WARNING LEVEL DOES NOT REQUIRED IMMEDIATE CORRECTIVE ACTION BY THE CREW? THE WARNINGS ARE IDENTIFIED BY?

2. THE MONITORED CIRCUIT BREAKERS HAVE HOW MANY CONTACTS ON THE CBs? WHAT IS THE PURPOSE OF THE CONTACTS?

3. THE MASTER WARN and CAUTION LIGHTS ARE SUPPLIED FROM ELECTRICAL BUS?

4. WHAT IS THE PURPOSE OF THE "EMER CANCEL" SWITCH LOCATED ON THE CENTER PEDESTAL? WHY IS IT LOCK WIRED WITH BREAK AWAY WIRE?

5. WHERE IS THE ECAM ADVISORY "INFO" LOCATED ON THE RH ECAM SYSTEM PAGE(S)? WHEN WILL THE "ADV" APPEAR ON THE RH ECAM SYSTEM PAGE(S) DURING ECAM OPERATION?

6. WHERE IS THE WARNING LIGHT DISPLAY PANEL (WLDP) FAULT LIGHT LOCATED IN THE FLIGHT DECK? WHAT DOES THIS INDICATE WHEN IT IS ILLUMINATED?

7. WHICH "FLIGHT PHASE" IS THE ENGINE START MODE LOCATED IN DURING ENGINE STARTING? WHAT RH ECAM PAGE COMES UP DURING THIS CYCLE?

8. WHAT INDICATION WILL APPEAR DURING AN ECAM SGU FAILURE? ANY WARNINGS?

Airbus ATA 31 Quick Quiz - Answer Sheet/notes

1.

2.

3.

4.

5.

6.

7.

8.

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ATA 31 - ECAM

COURSE CODE - M540000